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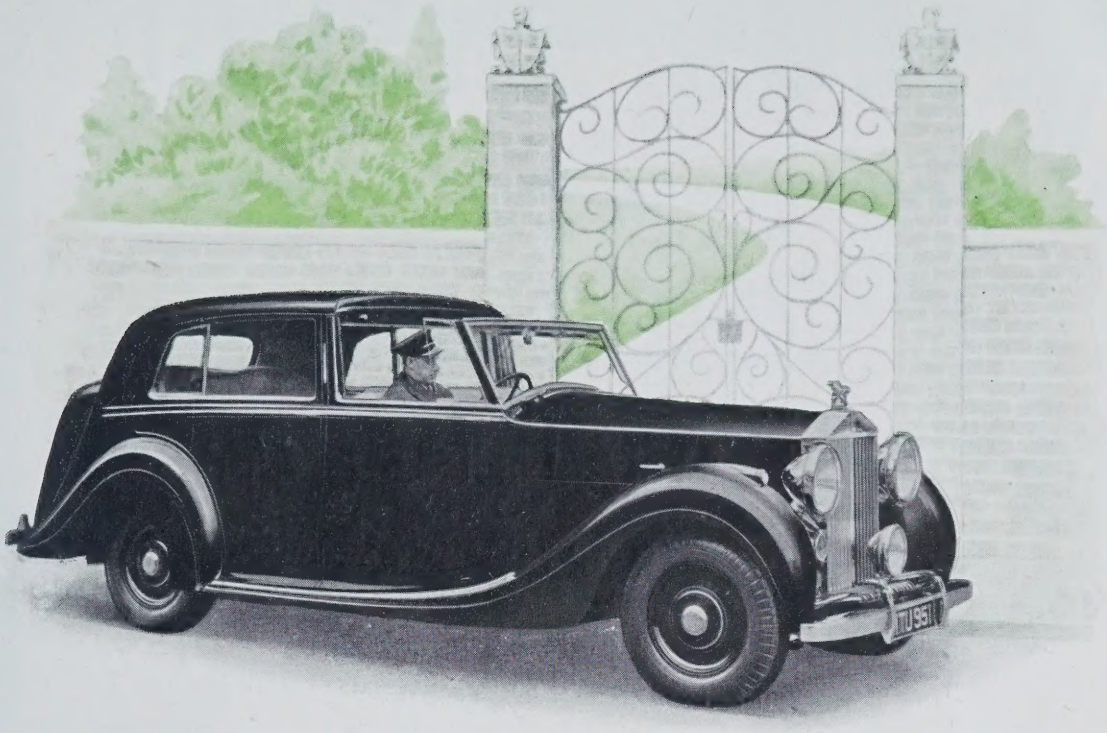

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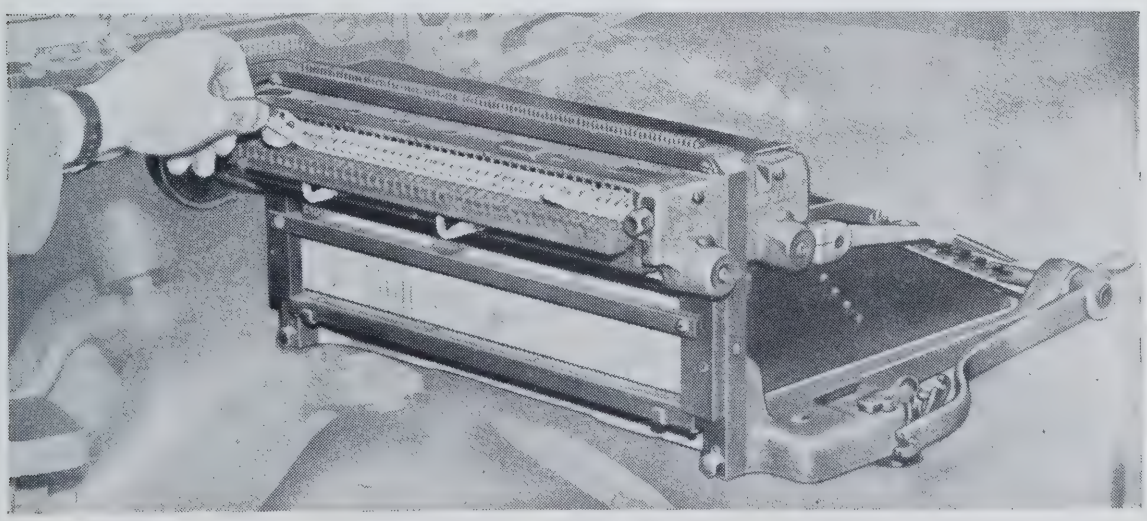

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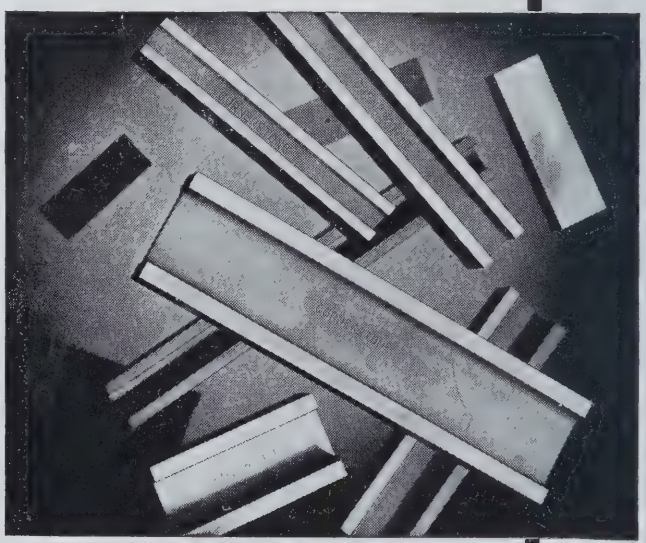

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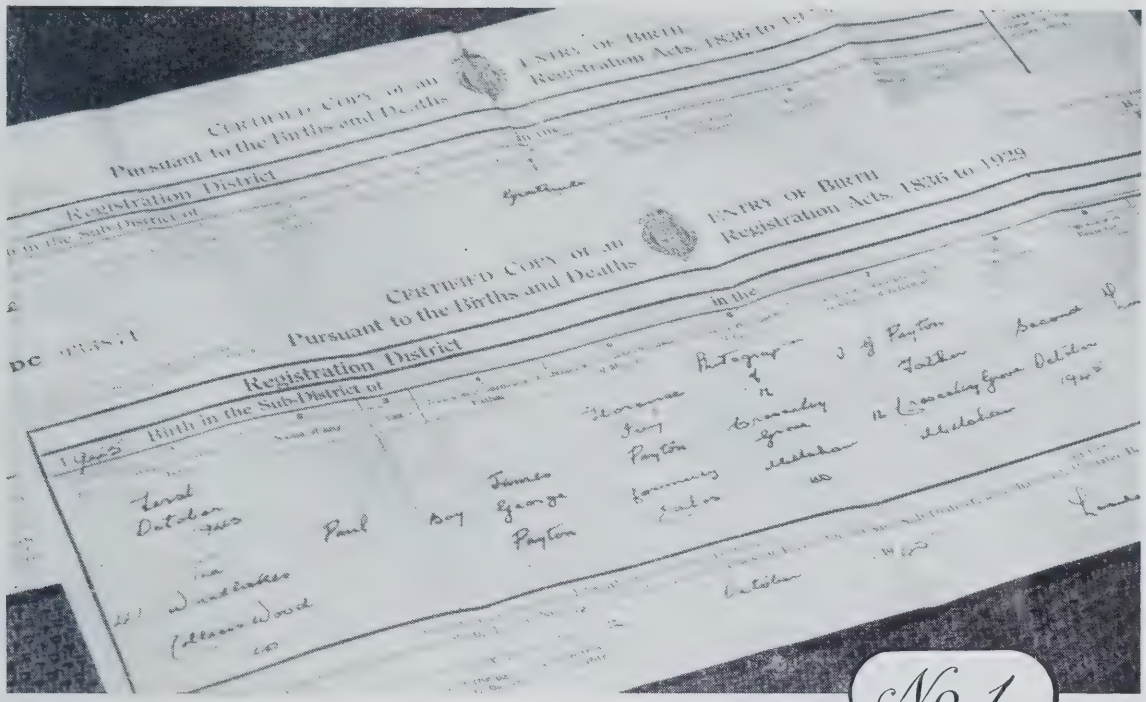
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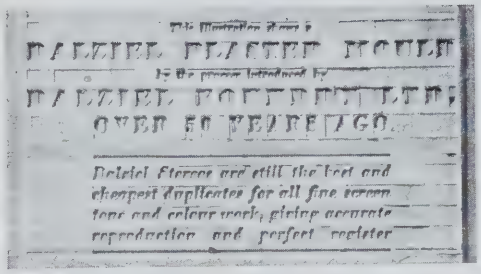
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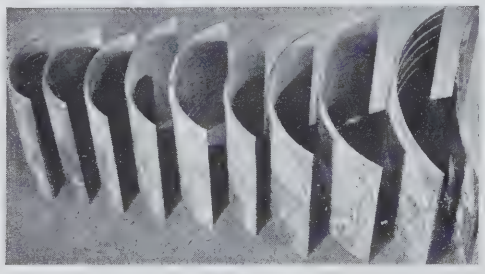

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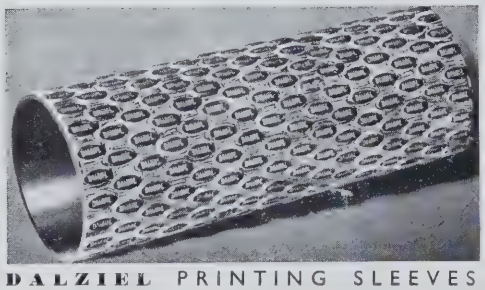

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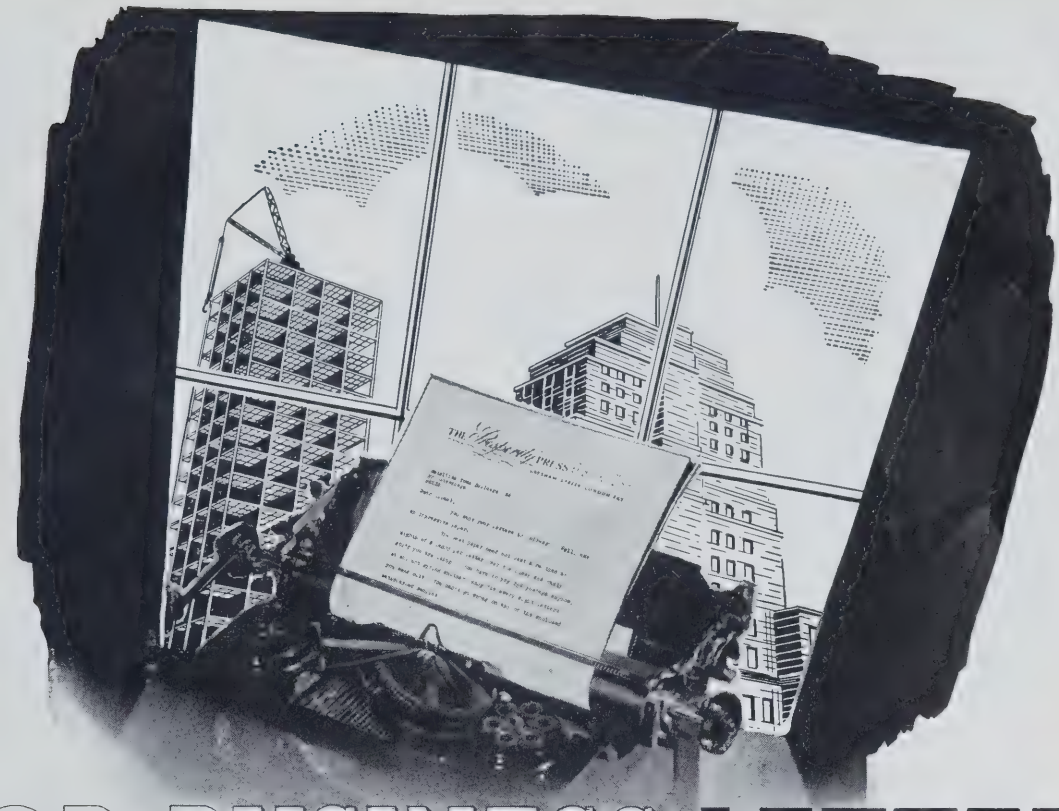

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Printing Specimens Reviewed

BY A. WADE BOTTOMLEY

GRAPHIC ARTS AND THE ENGINEER

From Messrs. W. Hopwood and Co., Ltd., the well-known technical advertising firm of Manchester, comes this beautifully produced brochure describing the firm's activities of interest to engineers and technical concerns.

As an example of what Messrs. Hopwood's can do in the design and production of catalogues, in the illustrating of machinery by line, tone and full colour, it is superlative.

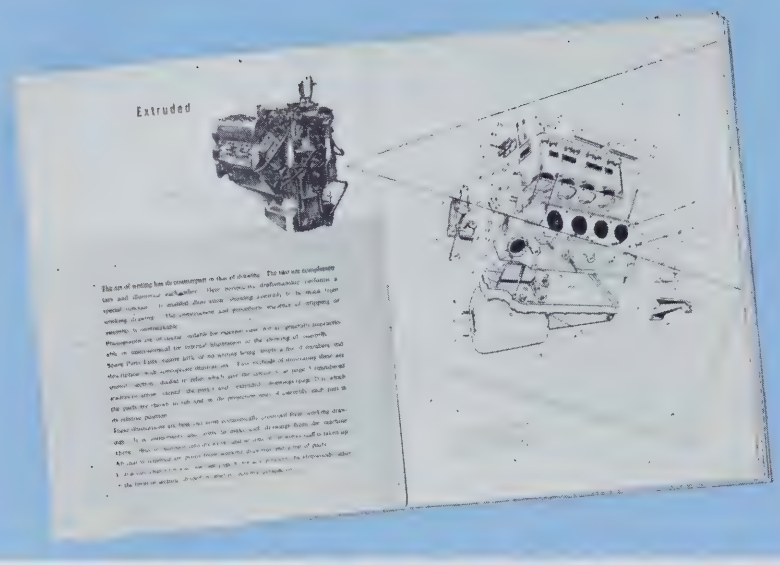
There is a sense of quality in this publication which our reproduction cannot possibly convey, and Messrs. Hunters (Armley) Ltd., Union Press, Armley, Leeds, have co-operated in no small measure to its success by their very excellent printing.

In size 9 ins. by 11 ins., and printed letterpress with eight pages, it has also a grained transparent jacket.

A soft and very light dove grey is used on the cover as a flat background colour: so light, in fact, that until one notices the gear wheels are really white, the grey is hardly apparent. The title page likewise uses this grey as an all-over background colour, and it is effectively used in a similar capacity on other pages behind some of the type matter.

The cover title in italics is in red, the remainder black, with the gears shaded in blue and thrown into relief also with vignetted blue tone. The vignetting here is just one evidence of very good blocks and clean, careful printing of a perfectly balanced and attractive design. The layout of the pages is in excellent taste and a fine balance has been maintained by the skilful use of white paper and positioning of type matter.

The illustrations on the two pages shown are the lightest in the book, but none are at all heavy. On the back cover are eight small full-colour reproductions of catalogue covers designed by Messrs. Hopwood's and it is worth mentioning that each is a very excellent design. It is also



worthy of note that the sectional wash drawings, perspective sections, extruded drawings and the colour section drawing for the chart were drawn from engineers' prints without sight of the actual jobs: a speciality of Messrs. Hopwood's, for which they have a reputation famous all over the country.

Congratulations to Messrs. Hopwood's on their layout, typography, artwork and retouching, to Messrs. Noakes Bros. for obviously good blockmaking, and to Messrs. Hunters for magnificent printing.

THREE SCORE YEARS AND TEN

Rivalling the "Graphic Arts" specimen in quality of workmanship, this brochure comes from the well-known packaging firm of Gregory's of Liverpool Ltd.

It is a very handsome souvenir indeed, most excellently designed and produced, being $9\frac{1}{4}$ ins. by $12\frac{1}{4}$ ins. in size, bound in full white cloth, with 72 white art pages. It is printed letterpress with an eight-page offset insert, five colours being used.

The cover design is exactly right for this type of work, restrained and dignified, with the dates die-stamped in gold and the scroll in purple. This combination on the white board is protected by a transparent jacket. Endpapers carry decorative line drawings by the well-known Liverpool artist, J. Coburn Witherop, of Liverpool water-front first as seen in 1875, and then the modern 1945 view.

It is most interesting and revealing to see how this firm has prospered since Robert Gregory — who is pictured with his three sons and grandson—founded the business in St. Anne Street, and I rather like the way in which the illustrations (again the work of J. Coburn Witherop) relating to the early years of the firm are drawn in a manner quite in keeping with the period. Then we see a change to a cleaner, more free type of drawing until the pages assume a very modern type of layout.

It has been rather difficult to select one pair to reproduce here, for there is abundant variety in layout, some using colour as a vignetted background, as shown, whereas others are more formal with centred half-tones and a minimum of copy set neatly above, leaving very wide margins.

I commend the neat heading design, which just breaks into an illustration, giving it a transparent effect. A champion job from a Liverpool team: Pagan Smith Advertising, Ltd., art work; Leonard Card, Esq., photography; Dellagana and Denby, Ltd., blocks; Brown and Bibby, Ltd., printing; and A. W. Duncan and Co., Ltd., the binding.

MAXICUT
High Speed Gear Shaper

Clarity is the keynote throughout this brochure. It is apparent in the cover design and on every page and it is evident that from the very commencement each phase of its production has been shaped to that end.

Printed letterpress in two colours, the brochure is $8\frac{1}{2}$ ins. wide by 11 ins. deep. Looking at the cover one sees first the title in excellent clean lettering, then the half-tone illustration, and so to the model number in black on the vermillion panel. The white rule carries the eye to the trade mark in red and white on the black base panel and the firm's name and address, etc.

The background in red and black half-tones is vignetted, leaving the machine illuminated to stand out very successfully. The cover is then varnished.

In designing the pages plenty of white space has been left around well-placed illustrations and copy. The red has also been used with discretion but to good effect for panels on which the one-word heading is in white brush script. Only on page 10 do I feel that an improvement could have been made, by keeping the heading in white on red as the others.

The photography and retouching are very good indeed, every detail of the machine and parts being perfectly clear.

For all this the office of A. Anderson, Elmside, Guildford, has been responsible, and Messrs. J. E. C. Potter and Son, Stamford, Lincs., have made their contribution with some very good printing.

MANCHESTER OIL REFINERY LTD

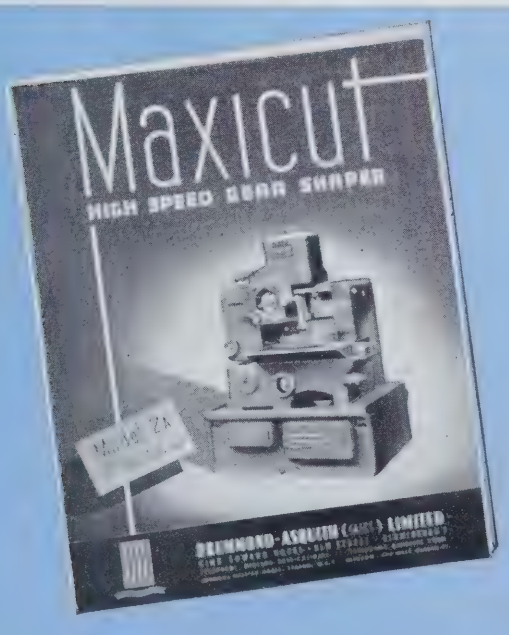
With the title " A British Refinery in Wartime," this brochure tells the story of one of the little-heard-of war jobs, the supplying of specialised oils for our war effort. It is interesting to read of by-products developed as partial replacements for linseed oil in paints, etc., and as substitutes for rosin in paper sizing.

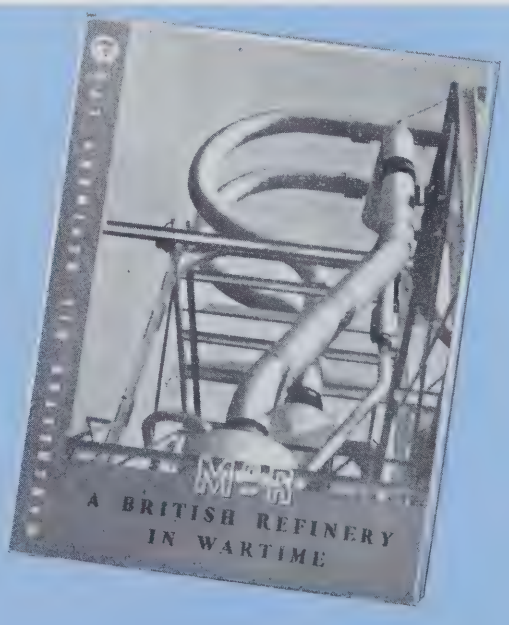
The brochure is 7 ins. by $9\frac{1}{4}$ ins. and is very nicely printed letterpress in dull green and black.

Looking at the photographs, one is struck by their brillance. That on the cover, for instance, is very bright and clean and one could be forgiven for thinking it perhaps a refinery in the Middle East! Overleaf, the full-page bled illustration is taken under similar conditions, and the back inside and outside covers too, the latter with vapour trails in the sky. All these have a definite pictorial quality which adds immeasurably to the success of this brochure.

I make particular mention of these illustrations because this little publication does not attempt anything spectacular in display. There is no second colour except where used on the front cover behind the lettering. It is just a straightforward, illustrated narrative of a wartime job and much depends here on these illustrations. The story is well written and the pages have a nice balance.

Cover photograph by Leslie Gough, inside photographs by Lancelot Vining and Stewart Bale. Printed and made in England by the Fanfare Press, London.





An Achievement in VERSATILITY

I have a recollection of a child's song which concerned, I believe, an "umphaloolah tree," whatever that may be. This came to my mind when I saw this cover design. Why, I don't know, except perhaps that the unusual name somehow jumped into my mind when I saw this most versatile tree on the cover of British Industrial Plastics' very fine brochure.

It is certainly a very unusual cover design, very colourful, and one which will attract attention and certainly some comment, which in itself is all to the good. The title, in bright blue, is in keeping and the initials in a heart pierced by an arrow cut on the tree trunk are an amusing and clever little brain-wave. The design is by R. Kramer and the cover is printed in seven-colour photolitho on special drawing cartridge, bound with transparent plastic.

There are 40 pages, $8\frac{3}{8}$ ins. by 11 ins. deep printed letterpress, with yellow, green and pink used most effectively and quite lavishly. It should be noted that these colours do not "mix it" on one page, being used quite separately, though at times the green may face the yellow or the pink the green. The colours are of pastel shades and, with one or two minor exceptions, their use is solely as background panels and as bands of colour which brighten the pages and add greatly to their attraction.

There are many clever ideas of layout in this brochure, far too numerous to mention. The two charts are very lucid in black and green; the placing of the half-tone illustrations on the pages and the arrangement of the text are also most praiseworthy; and page two of the text, containing the many acknowledgments, is cleverly designed. Note on one of the pages shown how the half-tones have been cut to a bracket shape and the balance obtained by the cut-out block on the left-hand page. The green, however, is too light in tone for the 8-pt. Gill used alongside the blocks on the right-hand page.

The book was designed by Cecil D. Notley Advertising, Ltd.; most of the photographs were by Studio Briggs, Ltd.; blocks by Direct Photo Engraving Co., Ltd.; printing by Geo. Gibbons, Ltd., of Leicester; and binding by Nevetts Ltd., all contributing to a very fine job indeed.

GAS IN INDUSTRY

Printed letterpress in red, yellow and black, this publication from the British Gas Council gives the case for gas as the most efficient and economical fuel for use in industry. The times when coal could be burned wastefully and without thought for fuel efficiency are past and in recovering 80 per cent. of the energy in coal in the production of gas, coke, benzole, sulphate of ammonia, tar and a very long list of indispensable derivatives, the carbonisation of coal is certainly both efficient and economical.

The title in yellow across the half-tone cover, made up of half-a-dozen photographs of works interiors, does not stand to advantage. It is, in fact, lost unless seen at a distance and I would have preferred to have seen this perhaps on a solid black panel—much smaller, of course, and placed either centrally or on one of three corners bleeding off. The lettering itself is admirable.

The 16 pages, $8\frac{1}{2}$ ins. by 11 ins. in size, are mostly very well treated, with excellent half-tones illustrating a variety of heat treatments in industry and the text is well displayed and easily read.

I feel that the yellow, where used as a second colour panel behind headings and captions would, particularly in the latter case, have looked better were it flush to the half-tones and taking the form of a narrow, horizontal band bleeding off where convenient. Being small and mostly square, these have an isolated appearance at present.

FISHBURN BLACKS

Any printer would know what "Fishburn Blacks" was concerned with and so, of course, that is the only necessary wording for this cover. The design is what matters, and for startling effectiveness, combined with simplicity of design, this cover hits the nail on the head.

It is 9 ins. by 11 ins. in size, the name at the top being printed in red and the white plastic binding of the board covers matches the simplicity of the lower-case white letters on the black ground.

There are 20 pages, each a masterpiece and an example of the effectiveness of contrast and boldness of simple design. The first, taking the form of a title page, has a bled band of black across the foot bearing the name "Fishburn" in red on a white oval with "eight selected black inks" set centrally above in alternate extra heavy 42-pt. and light 48-pt. lower-case Gill.

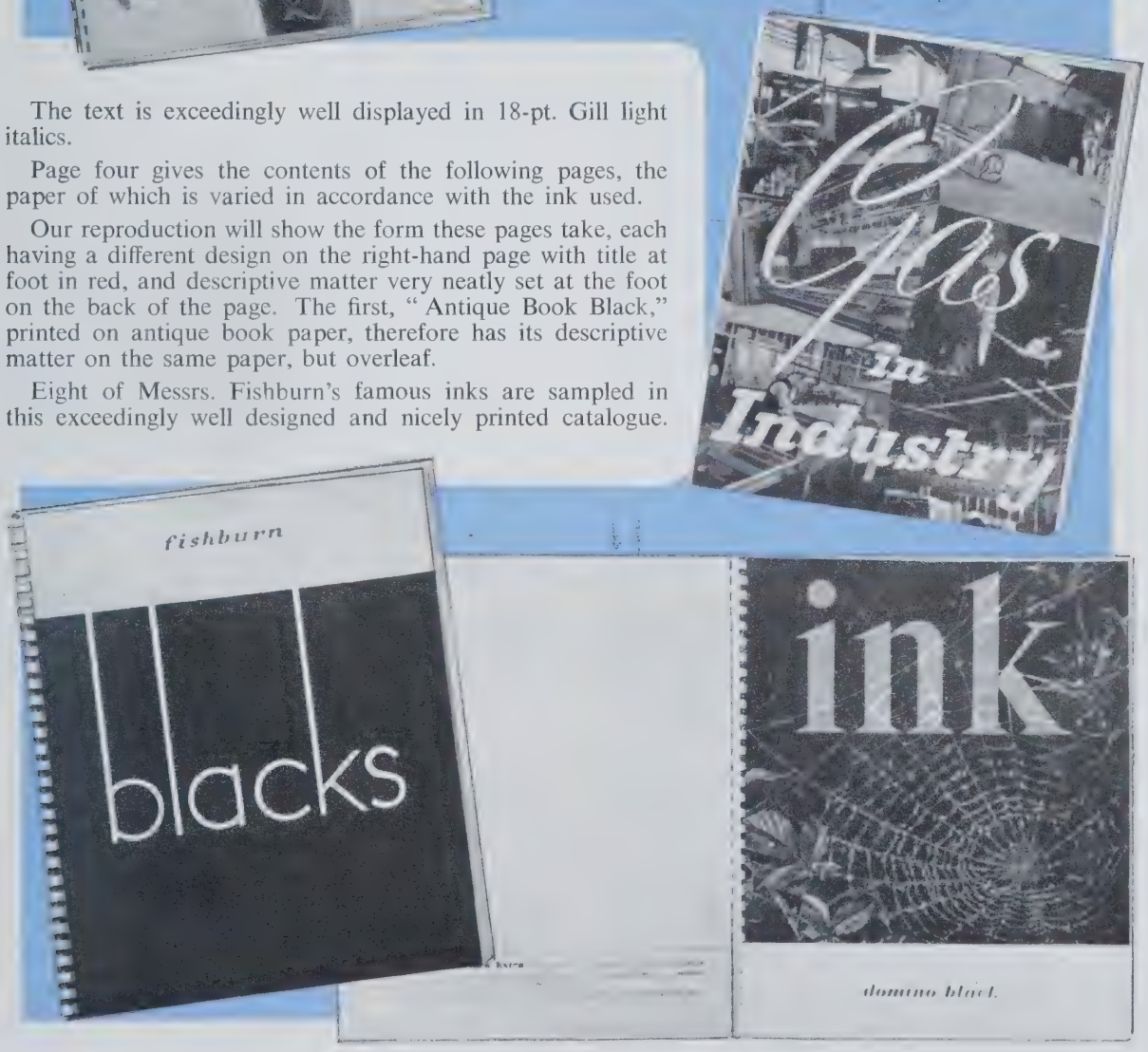
The next, as a pair of facing pages, employ the same black band right across with a round-ended white panel bearing the name "Fishburn Printing Ink Company Ltd.," the title name being in red.

The text is exceedingly well displayed in 18-pt. Gill light italics.

Page four gives the contents of the following pages, the paper of which is varied in accordance with the ink used.

Our reproduction will show the form these pages take, each having a different design on the right-hand page with title at foot in red, and descriptive matter very neatly set at the foot on the back of the page. The first, "Antique Book Black," printed on antique book paper, therefore has its descriptive matter on the same paper, but overleaf.

Eight of Messrs. Fishburn's famous inks are sampled in this exceedingly well designed and nicely printed catalogue.



J. P. SUPER LAWN MOWERS

A very effective little folder this, of eight pages $5\frac{1}{4}$ ins. by 8 ins., and printed letterpress in olive green and black.

The cover is very attractive and usefully shows the mower in a pleasant setting, the pool behind giving a suggestion of a product of some quality. Position of title and style of lettering is excellent, with the initials and the band across the foot bleeding off in green.

The pages are nicely displayed with half-tones bleeding off at the top, a tint panel of green behind, and a solid green band at the foot bearing the maker's name and address in black (The J.P. Engineering Co., Ltd., Leicester). My only complaint is that there is not quite enough space left between the conclusion of the text and the green band at the foot of the pages.

I do like the brush script occasionally used, and the olive green is a pleasant and restful change from the usual more brilliant green and is a most suitable colour for this well-printed folder.

THREE ILFORD BOOKS

Printing and Enlarging is a most useful textbook for the photographer wishing to achieve perfection in print technique. Printed letterpress in magenta and black on the 44 pages, it has an additional yellow on the cover, where it is used for the wording on panels of magenta. The excellent photograph used on the cover, together with the straightforward title will, I am sure, invite every photographer to spend a modest half-crown on a copy. The subject is very fully and clearly dealt with, even to some most useful instructions on the subject of the drawing of titles. The pages are admirably designed, with an abundance of useful illustrations, and nicely printed. A useful set of miniature specimen prints on various papers is quite a surprise packet in the back cover pocket.

The Photographic Recording of Cathode Ray Tube Traces.—No 1 of a series of Ilford Technical Monographs by R. J. Hercock, B.Sc., A.R.I.C., A.Inst.P., F.R.P.S., this little volume is bound in blue cloth and priced at 5s. I do not pretend to know anything of the subject matter, but from the production point of view the book is quite a good piece of work, 8 ins. by 5 ins. in size and with a letterpress jacket in blue and black. The 60 pages of matter are uncrowded, in spite of a large amount of text, and the bibliography and index at the back are well arranged.

Ilford X-ray Films and Screens for Industrial Bibliography is a useful handbook of 16 pages in the usual attractive Ilford manner, with an end pocket containing a price list and sample of Ilford Lead Screens. With the top panel of blue the cover is brightened somewhat above the piece of machinery in black beneath, the X-ray impression linking the two.

CYCLOSAN

Just a six-page folder, but it has a rather startling cover—one of those that catch your eye on a counter—and a simple enough yet well-designed interior. It is printed in orange, green and black offset and is $4\frac{3}{4}$ ins. by 7 ins. in size.

The whole of the wording on the cover is in black with the tapering lines behind in green and the staggered panel in orange.

"Cyclosan" certainly stands out strongly enough on the green, but where these lines commence to thicken, the smaller wording, "Protects Your Plants," etc., becomes quite obscure. This is important enough to be more easily seen.

The inside three-page spread looks very well. In all a very effective job.

MARINE SOUND EQUIPMENT

This booklet, printed letterpress in blue and black, has an extra printing of red for the trade mark on the covers.

The design shown on the front continues across the back, with the ripple effect in blue on the black ground and white across the illustration.

I find the majority of the pages looking rather crowded and would certainly have preferred more white at the top, particularly on pages 2 and 6, where the matter could very usefully have been set in a smaller size and the lines well leaded. Mere size of type alone does not always give most emphasis.

This booklet, however, has to carry quite a lot of matter, which is well broken up with many very interesting illustrations, and the second colour is intelligently used to help lighten the pages. Printing is of good quality, by Woodbridge Press, Ltd., Guildford.

TWO FROM LEICESTER

Each 4 ins. by 9 ins., "Information Summary" is of eight pages and wire stitched, the other being an eight-page folder. The latter, containing general information, a simplified map and four half-tone illustrations inside, uses pink as an unusual second colour. It is really surprising the amount of matter which this folder carries, but it is so well designed that it certainly does not appear unduly crowded.

"Information Summary" also has an unusual quality in this type of work, with its cover of pale blue matter on a black ground *and* varnished. The pale blue, being used solid as an all-over background on every page with the sole exception of the bled-off half-tones, almost gives one the impression that tinted paper has been used. It is very effective, however, and being quite light in tone it does not, of course, interfere with the text in any way. Both are well designed and printed.

SOAG DRILLING MACHINE

A very good production from Soag Machinery Company features their Automatic Drilling Machines to good effect. The cover uses orange for the second colour and the half-tone of the machine is effectively displayed.

A blue-grey on the two inside pages of the folder runs diagonally down the outer edges as a background colour to two illustrations of the machine.

The setting of the text in Rockwell and Gill is excellent, the heading in orange and black having " punch " without heaviness. These are two well-arranged pages. The back cover illustrating Soag's Printomatic, Crimped Cup Machine, Bench Model Power Paper Drill, Jogger and Glueing Machine looks just a little " bitty," and I would have preferred a little more of the boldness and simplicity of the centre pages' design. The printing is well done and the colours and half-tones quite clean.

'ADVANCE' GUILLOTINE

Taking the form of a broadsheet, this specimen has an additional four pages stapled in, giving in all ten pages, size 8 ins. by 10 ins., and is printed letterpress in yellow, green and black.

The liberal use of these two colours has kept cover and pages bright, offsetting any tendency which, by the very nature of the product, may have given a somewhat heavy effect.

The large half-tones of the guillotine on the cover and second and third pages are in green and black on a yellow background and look extremely well. Other half-tones showing close-ups of mechanical detail are bled off and the use of adjacent yellow bands again gives an effect of lightness to the pages.

Text in Gill is neatly displayed, leaving good margins. Printing is quite good and the production comes from C. P. Wakefield Advertising, Ltd., Fleet Street, E.C.4.

ROPE TALKS

Interesting as ever, " Rope Talks " continues to provide 26 pages of pictures and text of a quality equal to many magazines sold over the counter—indeed, far in excess of quite a few.

Printed letterpress by Adams Bros. and Shardlow Ltd., London and Leicester, this issue has the title in orange with the " No. 19 " in blue on the black half-tone aerial view of Mulberry Harbour. There is little mention of ropes in the six articles, all of which are good reading. From the story of Mulberry Harbour to bread making at Cadby Hall, Port of London pilots, Bailey bridges, the two Cunard " Queens," and finally " Diamonds and Industry." The last half-page gives the addresses of British Ropes, Ltd., the sponsors.

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372 Corn Exchange Buildings
Corporation Street

LET'S DISCUSS PRINT BUYERS PROBLEMS

with **NORMAN SKINNER**

MORE than once during the course of conversation with buyers of printing, the remark has been made to me: "We advertising managers would welcome more consideration in the pages of *Paper and Print*. Why don't you run a special feature to assist us in our dealings with printers?"

The argument is sound enough. Many advertising men as well as printers read "Printing Specimens Reviewed" and it is only natural that they should feel the need for additional features presented from their "side of the fence."

This, then, is our response to their requests. As a beginning we will deal with some of the more usual problems which tend to irritate both customer and printer owing to lack of appreciation of each other's difficulties. If any queries occur to our readers, we shall be most happy to assist them and publication in these columns will help others faced with similar problems.

Let us consider a very fundamental factor first: the question of time to allow for a job.

Many newcomers to print-buying base their ideas of delivery times upon the speed with which a newspaper is produced—and, all too frequently, some unbridled representatives give the impression that their firm can "deliver the goods" in approximately the same time. Usually they come a cropper.

The *average* printer, and I emphasise *average*, is not in a position to deal with good-class work in a matter of a day or two. There are, of course, some firms in the bigger cities who specialise in certain classes of work and this enables them to produce a job very quickly but they are exceptions. Specialisation is the keynote in both the case of the newspaper and this latter example. To these may be added a third—periodicals. Here again, the whole production is streamlined, although in many cases the bulk of colour pages, etc., are printed weeks in advance and the portions containing topical matter run off at the last moment. So please do not think that your 32 pp. quarto brochure in three or four colours with die-stamped cover can be churned out like the foregoing.

"Tailor-made" Jobs

Yours is a tailor-made-to-measure job. It needs careful individual attention by highly-skilled men and to do it the justice it deserves, ample time is imperative.

Consider the printer's task. In these days he is already up to his neck in work before you ask him to take on your job; but he is not one of those people who live only for today, so he takes your order because he likes your business methods and hopes you will remember him when the present spate of work fades away—as fade away it surely will.

Right. Let us hope you have given him all the copy, blocks and clear instructions, plus a modicum of latitude, so that he can use his own common sense where necessary without constant reference back to you, his client.

Before any start can be made upon the job he must have men and machines available—so the work takes its place in the inevitable queue that typifies the times in which we live.

When a start is eventually made the manager chooses one of his best machine compositors for his skill in handling better-class work. Setting type by machine is no mere automaton's job. You want your text matter nicely spaced and crisp in appearance. Upon the operator depends the result. If, in addition, there are a number of complicated tables to be set up then it is essential that only a man well-versed in that sort of work be employed. So you see that here already comparison with straightforward newspaper or periodical work is out of the question.

Having set all the type by machine so far as is possible, the job is handed over to equally skilled "display" compositors to be

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assembled (or "made-up" as the printer calls it) into pages. The display men also set all the larger lines such as titles, headings, etc., with which the machine cannot cope. Unless your colour job is very simple it is first made up as one colour—at least so far as the type is concerned—and afterwards the necessary words, lines or ornaments are literally "picked out" and made-up separately to register with a pull previously taken from the whole forme.

Display Work Problems

Much of the work now being produced for the advertiser presents some very pretty problems to the display compositor: a blue heading "bleeding" at top; a red panel in a certain position on the left of the page; a special fold; a special index; an odd colour here, another one there; nothing uniform, no two pages alike, no "key" to which to work. It's not so easy. If you have found a printer who copes with it satisfactorily, then don't be in a hurry to change your allegiance.

When the compositors have made up all the pages in their respective colours (which means two, three or four "pages" for each page, according to the number of colours) they "impose" them in "formes," i.e., arrange them so that, in the case of our example, eight pages are printed at once and subsequently folded in numerical order.

This "imposition," as it is called, demands the greatest skill and accuracy. Take a simple example: the layout man indicates type, rule or blocks to run right across two pages. Unless they are the two centre pages, these will fall into position in the forme either at extremities or head to head—they will not be side by side. Indeed they may quite possibly be *in two different formes.* In order to ensure that they run across as intended without unsightly bad alignment the compositor must exercise great care in the first place and this must be followed with equal care by the machine minders who print the job and the binders who fold it. So you will see that an apparently simple design can involve quite a bit of trouble.

Proofs

However, having reached the stage where type, blocks and what-you-will are all ready for printing, you will doubtless want to see a proof—and no one can blame you if you want to see it in full colours just as the job will look when it is finished. Some buyers contend that this is a particularly sore point—the printer is reluctant to supply such proofs.

Well, the desire on the part of the client is perfectly understandable. He is paying a good price for a good job and he wants to see that it is O.K. before the final run. Who can blame him? Proofs of this nature, unfortunately, take a lot of time and cost a lot of money but I firmly believe the printer must not only resign himself to the justification of such demands but must equip himself to cope with them. At the moment it usually means that, to obtain good register and a respectable proof, he must use his printing machines—which he would rather see running on a long job. This lies at the root of any desire evinced by the printer to avoid colour proofs. One day, perhaps, every printer of any standing will have proof presses capable of producing such proofs without holding up a machine. We can hope so, anyway.

We have now surmounted about half of our troubles. When the proof is passed (without much alteration, we trust, for reasons which will be explained in later articles) the job is ready for printing. Here again we have our difficulties. Certain colours must ofttimes be printed first for technical reasons but it may happen that such colours are not "key" formes—in other words it is impossible to obtain correct position of pages from the few pieces of colour in that particular forme. Therefore we have to put a key forme on first (usually, but not always, the black). Having made certain that this is correctly positioned, we can return to our original colour, fit it in, prepare it for printing, and eventually get on with the run.

Matching Colours

Matching colours is one of the machine minder's biggest bugbears. Give latitude where you can. I well remember spending hours and hours matching a well-known product (according to the customer's idea) when the product itself varied with each batch that left the factory! The customer paid for his pertinacity in hard cash—but it was an expensive and wasteful business. Avoid such hard and fast requirements if at all possible.

Space is getting short but please remember that even when the job is running there is far more to it than letting the machine churn out the copies. The timing of different colours to print one upon the other so that the first is neither too dry nor too wet is most important and an error in judgment may well cause the whole job to be spoilt on the last working. If the printer is being rushed such a risk is infinitely greater than if he has reasonable time.

The binding and finishing department also needs reasonable time to produce a good job. Scamped work at the last—such as an error in cutting or folding—may easily spoil a nice job.

So there you have a very quick picture of the progress of your work through the printing office. In the next issue we will deal with details and queries from readers. Meanwhile, for good work, TIME IS THE ESSENCE.

Send Your Queries to
The Technical Section
PAPER & PRINT
329 HIGH HOLBORN
LONDON, W.C.1

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VELLUM FOR LETTERPRESS PRINTING

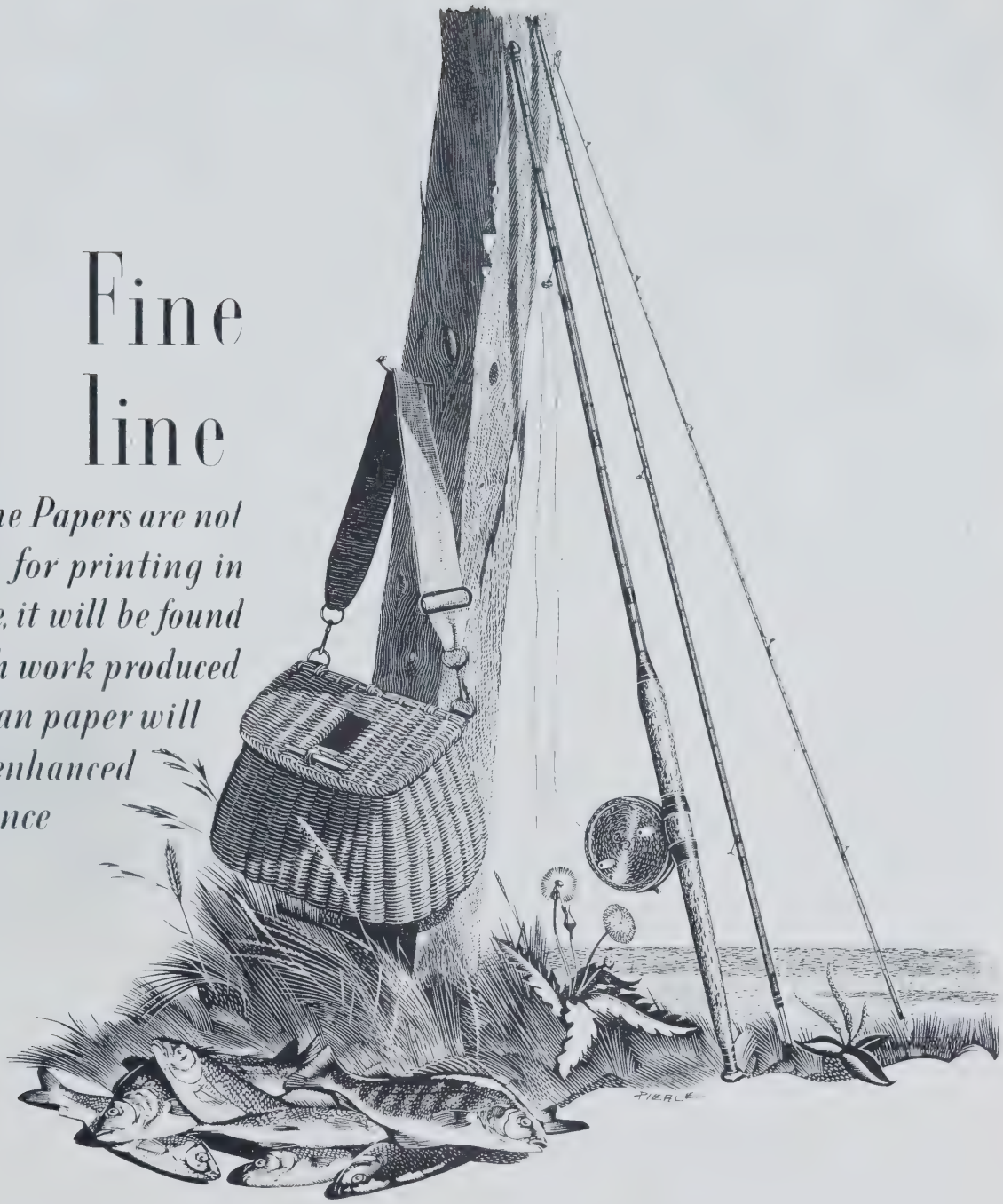
THOS. HARRISON, MBE.

IT is now almost 20 years since I was asked to take over the binding of some vellum books which were not proving a success. The previous binder was pleased to unload the job, for his men were having a real headache over them. One of these books I took over I saw quite recently in a shop window with the sun pouring on it, and there appeared no sign of any warping of the covers even under those very trying conditions. I felt my theory for handling vellum had been amply proved correct. On the other hand, during a visit to Windsor Castle Library I was shown a vellum book bound about the same time and the boards were warped so badly that the librarian had a grooved wooden slipper made to slip on head and tail to enable him to get the book into its place on the shelf. The method of binding was similar to that used by the first binder referred to and both cases were unsuccessful. It was the traditional method practised by the vellum binders of half-a-century ago. I should be the last to question the skill of those craftsmen, for I know many of them to be craftsmen of the highest order. Their work was stationery work and very different from the modern letterpress. Laminated hand-made boards, with often a parchment lining to counter the shrinkage of the cover, was their basis. Moreover, the books were pressed, tied up in boards and kept under pressure for a minimum of three weeks before they were exposed to atmospheric action. Modern conditions will not permit of such practices being applied to letterpress work, nor is it practicable or desirable to apply those methods to the lighter and more dainty reading books. During the seventeeth century limp vellum was much in vogue for small books and to-day many of them are as beautiful as ever.

Before proceeding, let us examine the nature and manufacture of vellum. Vellum appears to have derived its name from the same source as veal, for vellum proper is calf skin. Parchment is made from sheepskin and foril is made from split

Fine line

While Fine Papers are not essential for printing in Fine Line, it will be found that such work produced on a Cowan paper will have an enhanced appearance



TRADE MARK

Alex. Cowan & Sons Ltd

Makers of Fine Papers since 1779

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sheepskin; and skiver may be made from the outer portion of the split. The word vellum is often used to designate other skins than calf and becomes an indication of method of treatment, and so there is pikskin vellum, goatskin vellum and any other skin that may be treated in the same way as vellum. It would be impossible for me to give a full technical description of the manufacture of vellum. That could run into several volumes, require the aid of many specialists, and then leave much unsaid. I have been assured that it takes three months to produce a skin of vellum satisfactorily. The skins go through several processes of washing and cleaning before they are put into lime pits, where they remain for several weeks. The hair is then cleaned from the outside and the fats from the inside. Other cleaning and dressing processes follow and whilst the skin is sodden wet it is stretched on a frame and again treated with dressing. At the right moment the surfaces on both sides are scraped over with a huge half-moon scraper and allowed to thoroughly dry before removal from frame. All sorts of finishes can be put on the surface and the skins can be prepared for writing, printing, book covers, and many other uses. Pure whites and tones of infinite variety can be obtained. Some of the unbleached skins will give character of their own in a bewildering variety of colour and veins. Large animals will give thick, hard skins, and the softer varieties come from the smaller and softer-skinned animals. The ancients made many of their fine leaves for very small books from premature births.

Thus far we can conclude that vellum and the like is just raw hide, cleaned, preserved, stretched and dried flat, and any moisture applied to it will soften it, but in drying again it will contract to its original shape. Further, many skins are transparent in places and require lining. Therefore the most natural thing to do is to line the vellum with paper, using paste as an adhesive and softener. That is exactly what the Victorian vellum binders did, so successfully on their stationery books, and that is exactly what I ask you not to do on letterpress books.

The first approach is to keep as much moisture as possible from the side and thus avoid contraction. Instead of lining the vellum with paper, line the boards covering the edges and a double lining inside and allow to thoroughly dry. Glue the boards with well-frothed glue, fix the vellum on the boards, allow to thoroughly set under pressure, with blotting paper to absorb what moisture there may be in the glue and then consider the back and the turn-in afterwards. If and when a suitable non-aqueous adhesive is found, there will be no trouble with any contraction. The back, joint and turn-in can be moistened at will and the back lined with paper. The adhesive used can be either paste or glue.

The guiding principle, then, is to avoid moisture where it can be troublesome, but apply it where it can be helpful. The contraction on the back and joint is helpful in making the cover fit snugly to the book and the contraction on the turn-in can be helpful to draw in the edges towards the book. Vellum and its like can vary in its character extensively and many modifications in detail may be necessary, but all must come within the principle explained. As far as practicable, thin skins should be used on thin, small books, and increased in strength and thickness as the book requires. In practice one has, however, many small pieces too small for large books and too thick for small ones. Within reason, this thickness can be reduced for back joint and turn-in by scraping. The best scraper I have found was made from a table knife cut straight across and bent over half-an-inch from the end as near right-angle as possible, sharpened from the outside, with a fine burred edge on the inside of the angle. The scraping is done by drawing the knife towards the operator. This has the effect of removing the outer hard crust on the inner side, releasing the fibres and giving a great measure of the desired flexibility for light work.

In many of the fascinating seventeenth century limp vellum books the vellum was turned over on itself without adhesive or the support of boards. The intriguing right-angled turn of the yapp foreedge was adopted to keep the book flat. Those were days when books were not expected to stand on their edges, but the same effect can be obtained with the support of boards, but the turn must be stuck down.

From these tiny little limp books to the formidable Memorial Book illustrated, there can be an infinite variety and modification should be made to suit individual books. In the case of the Book of Remembrance everything that could be done for durability, drawn from individual experience, and the experience culled from books from the dawn of the Christian era, was applied to this book with the purpose of making it last as long or even longer than any of its predecessors. I give, therefore, the outstanding constructive principles applied.

For such a formidable book vellum leaves were necessary. Skins were selected of a suitable flexibility for the size and thickness of the book, with a surface suitable for writing on. The number of leaves being pre-determined, it remained to determine the number of leaves to each section. Not too many for the thread, but sufficient for the thread to hold on to. Three four-page folds insetted made the best balance. The thread was the finest unbleached waxed linen thread. The sections were sewn on double thickness thongs of white vellumised pigskin. This is proved to be the most durable of all leathers, retaining its flexibility indefinitely. The method of sewing was

THIS beautiful four colour subject is printed on *Silcote* which is an Esparto paper actually coated on the paper machine.

Silcote is textured like the petals of the rose and is a modern product from an old established mill

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PETERCULTER
ABERDEENSHIRE

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LONDON, E.C.4

PIONEERS IN THE MANUFACTURE OF COATED PAPERS

the original double flexible, where the thread pierced the thongs and then looped itself round them. The kettle stitches were reinforced and left as subsidiary raised bands. The swelling necessary to get the round and the joint was obtained by carrying the threads round the thongs between each section until the necessary one-third had been added to the thickness of the back. The ends were part of the section. The round formed itself from the swelling, and the joint was obtained by clamping with the backing boards, moistening the back until the sections were malleable enough to be forced over with a wooden concave tool, then well glued and consolidated. It was not taken out of the press until the back was bone dry, for it would have been fatal for the moisture to escape beyond the packing boards. The back was lined up with stout undyed Niger morocco, well pasted and then well consolidated with the folder before it was quite dry and finally waxed to resist atmospheric action. Hand-made laminated rope boards, lined and counter-lined, and well seasoned, were used for the foundation of the cover. Recesses were made in the boards to correspond with the thongs. The boards were well glued, the vellum attached and pressed on a thick wad of blotting paper to ensure adhesion over the bevel. The turn-in was well moistened and made malleable with paste. Inside the yapp fore-edge a silver rod was fixed as an extra reinforcement. The space between the boards, constituting the back and the joint, was lined with well-pasted hand-made paper and moistened to obtain the necessary malleability, and the thongs laced through to the outside only, the back and joints set in position and allowed to dry under pressure. The shrinkage of the cover set the back, the bands and the joints and became part of the book. It remained to lace the thongs inside and set them into the prepared recesses. The stones were recessed and fixed through the covers with U-shaped pins. The filling-in inside was a thin hand-made rope board, permanently fixing the thongs and the pins of the stones. The finishing is another story for another time. The cover was polished with a warm iron and slightly varnished. When the historian, in centuries to come, is trying to assess the social, economic and industrial life in this country after the second World War, in the midst of a mechanised world, this book will appear an enigma and perhaps he will smile, or perhaps not.

The courtesy of F. G. Marshall enables us to reproduce this binding on page 182.

☼ ☼ ☼

PHOTOGRAPHIC ACCESSORIES

ILFORD SPOTTING BRUSHES

An important and very welcome addition to the range of accessories now available from Messrs. Ilford Limited has just come to hand in two sample spotting brushes.

Retouchers have been too long "making do" with old brushes and war-time makeshifts of very inferior quality. These brushes are definitely of good quality, in particular the sable, which, of course, has no equal, and our sample has good "spring" and points excellently without splitting. We could wish for better finish to the handles but that must wait—the brush is the important thing.

FOTONIC PHOTOGRAPHIC PAPER

Another item in the Ilford range is a fluffless absorbent paper now available under the name Fotonic Photographic Paper. Supplied in sheets size 25 ins. by 20 ins. and weighing 60 lbs. per ream, the prices are:—

Per ream of 480 sheets ...	...	180/-
Per quire of 24 sheets ...	...	9/-

At the Heart of the Empire

WESTMINSTER ABBEY

Original drawing by Brian Cook executed for

R. T. TANNER & CO., LTD

Paper, Board & Envelope Specialists

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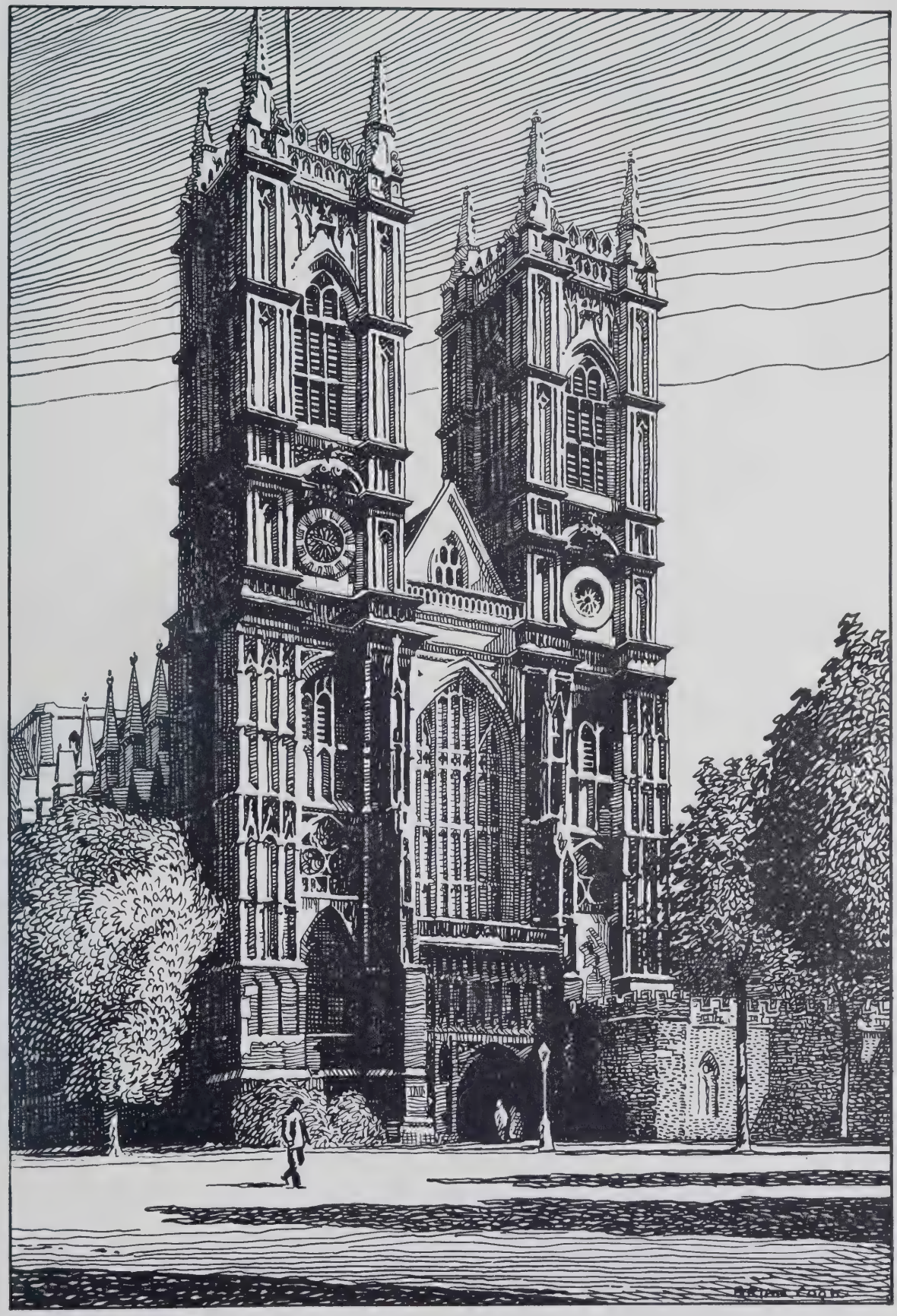
TELEPHONE: CENTRAL 7051 (6 LINES) TELEGRAMS: TANNER, FLEET, LONDON, (2 WORDS)



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IN RELATION TO ***PAPER***, CONSULT—

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ELECTRIC DRIVE of PRINTING MACHINERY

by R. ALLEN
A. M. I. E. E.
Assoc., MCT.

● Mr. Allen's activities have covered a very wide range of industries, including the electrification of several printing works. This article, one of many from his pen, we reprint by kind permission, from the *Metropolitan-Vickers Gazette*, with which company Mr. Allen has been connected on electrical installation schemes for the last twenty years.

THE term " printing " can be applied to any process by which a print is obtained, but it usually refers to typography, or, as it is now generally termed, " letterpress printing." Letterpress printing is the art of producing impressions by means of pressing an inked relief surface on to paper or other material.

It is interesting to record that the progress made in the printing industry has been largely accomplished within the last 150 years, and the great send-off to such progress was the invention of the paper-making machine and the steam press. The development of the printing press represents a truly remarkable history of achievement. Presses constructed of wood and operated on the screw principle were in use for several centuries, and no radical change came until the end of the eighteenth century when, for the first time, a hand-operated press was constructed entirely of iron. It was in the year 1814 that the first flat-bed machine was constructed with a continually revolving cylinder, and two such machines were installed in " The Times," London—the issue dated 29th November, 1814, stated that it was printed by steam power.

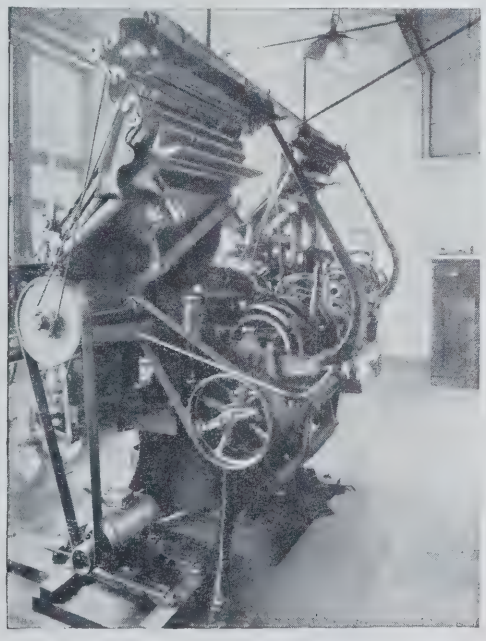

Fig. 1.—A ½ hp., 954 r.p.m., type " K " squirrel-cage motor driving a Linotype composing machine.

These steam-operated presses printed at the rate of 1,000 impressions per hour which represented a speed four times greater than had previously been obtainable from the hand-operated presses; but to-day electrically driven machines are capable of printing at a rate that must surpass anything that the early pioneers could ever have conceived possible.

There are two main operations in letterpress printing, as follows:—

(1) The setting up of the type, reading, making up the type and blocks into pages, " imposition " and locking up. (" Imposition " is the distribution of the pages in the forme in such a manner that the pages will occur in correct sequence and position when the sheet has passed through the folding machine.)

(2) This is, of course, the work of a compositor and is done in the composing room. Printing, which includes the fixing of the forme on the machine, getting the position on the sheet, inking and the printing of the sheets.

A certain amount of typesetting is still carried out by hand, but by far the greater portion of it is now a question of mechanical composition, and the machines used for this purpose can be divided into two classes:—

The Linotype and Intertype which cast a line of type.

The Monotype which produces " justified " lines (i.e., even spacing between words) of single types.

The Linotype and Intertype comprise a keyboard, magazines containing matrices, casting apparatus and a distributing system. The compositor, when he presses a key, operates certain levers in order to release a matrix which slides down a shute, and this is continued until a word is complete when the compositor by touching another key causes a double wedge spaceband to be placed between the words. When the line is complete a

lever is depressed which causes the matrices and spacebands to be carried to a position in front of the mould and behind which is situated a pot of molten metal. The line is " justified " while in this position by the pushing up of the spacebands from below, the line thus spreading out to the full measure. A plunger in the metal pot then descends and forces the molten metal into the mould and against the face of the matrices. The resultant metal bar with the letters in relief is then automatically trimmed for height and thickness prior to its being ejected on to a receiving galley. The matrices are released and carried back automatically to their correct boxes, the compositor in the meanwhile proceeding with the next line. A Linotype machine is shown in Fig. 1, and this is driven by a $\frac{1}{2}$ h.p., 945 r.p.m. squirrel-cage motor through a flat belt, as seen in the left of the picture.

An Intertype composing machine, which is generally similar to the Linotype, is shown in Fig. 2, and this is driven by a $\frac{1}{2}$ h.p., 960 r.p.m., type RBA repulsion induction motor which is very neatly accommodated behind the machine.

The Monotype is another type of composing machine, and in this case produces " justified " lines of single types. It comprises two distinct machines—a keyboard and a caster. The keyboard has the appearance of an elaborate typewriter and, as the operator depresses the keys, holes are punched into a strip of paper which automatically travels with each tap of the keys from one spool holder to another, each letter being represented by its particular combination of perforations. At the end of each line a pointer indicates what special keys should be touched in order to ensure the justifiction of such line when eventually cast in metal. When the spool is completed it is placed in position on the casting machine, which contains a metal pot, a mould and a matrix holder. The perforated strip of paper controls the action of the mechanism which brings the respective matrices into position over the mould in the order desired. When the matrix has been momentarily clamped into position, a jet of metal is forced into the mould and the type cast. The characters as cast are pushed along until, when the line is completed, they are automatically transferred to a " galley." The last line of the spool is the first to be cast, but when each galley is completed the lines will run in correct sequence as in the copy.

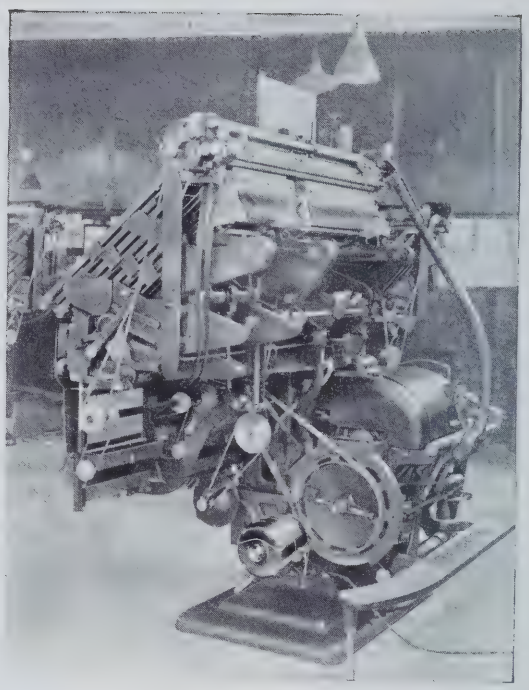

Fig. 2.—A $\frac{1}{2}$ hp., 960 r.p.m., type " RBA " repulsion-induction motor driving an Intertype composing machine.

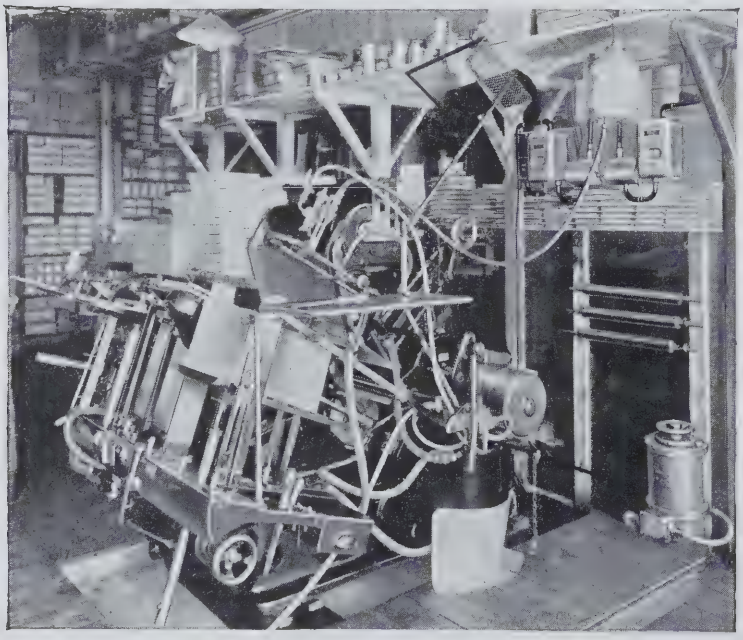

Fig. 3.—A 1.75/0.8 hp., 1680/750 r.p.m., type " CFT " 3820 motor driving a Heidelberg automatic platen printing press. The separate speed regulator is also shown, together with the contactor and isolating switch.

The work in the composing room being completed the " forme " (i.e., frame of pages to fill one sheet) is sent to the press and the printer's work commences. There are many different styles of printing machines to-day and only those in most common use will be referred to in this article.

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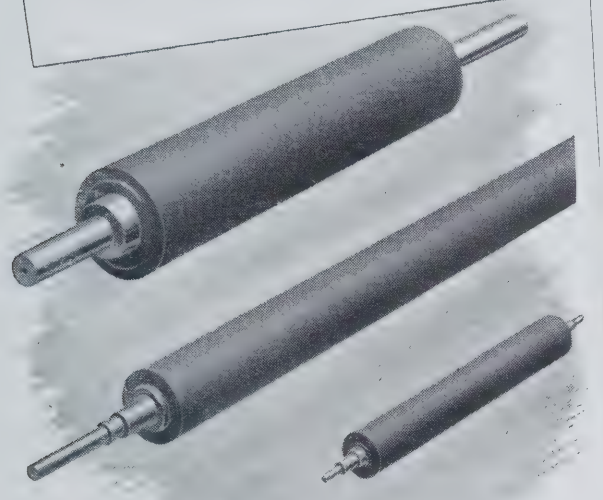

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The platen machines now used are generally known as " light " and " heavy " types. Light platens are fast running machines suitable for general job work. Their action brings the platen on which the sheet to be printed is placed into a position where the sheet can be pressed against the forme, which is held in a vertical position. The forme is automatically inked by two or three rollers passing over the surface, the ink being fed by a roller from a duct on to a rotating " disc," which assists in the distribution of the ink before the inking rollers take up a supply from the disc. The platen and the bed are brought together by means of rods working on eccentrics. The feeder stands in front of the machine, lifts a sheet of paper with his right hand, places it on to lays on the platen which rises and prints the sheet. On the return motion of the platen the feeder removes the printed sheet with his left hand and places it on a table, at the same time placing another sheet on to the platen ready for printing. Fig 3 shows a Heidelberg automatic platen press driven by a 1.75/0.8 h.p., 1680/750 r.p.m., type CFT.3820 motor with J.M.T. type induction regulator. This variable speed, commutator type of motor will be described in detail later.

There are, in addition to the platen machines, flat-bed cylinder presses where the impression is obtained by means of a cylinder pressing a sheet of paper on to the face of a forme which is secured on a flat horizontal bed. The cylinder runs in bearings held by brackets and rotates as the bed moves to and fro beneath it. There are three different styles known as:—

(1) The " drum cylinder."
(2) The " stop cylinder."
(3) The " two-revolution cylinder."

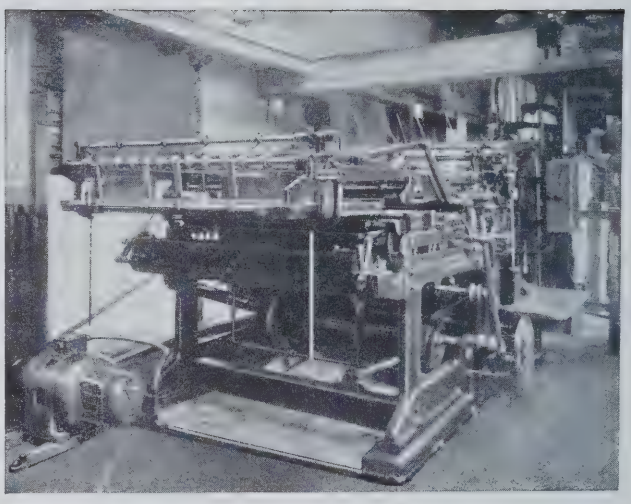

Fig. 5.—A two-revolution printing press driven by a variable speed slipring motor, type " M," 3/2.25 hp., 940/700 r.p.m. The drum controller is visible on the right-hand side of the machine.

The drum cylinder machine is not now in common use. The cylinder with this type of machine continually revolved making one revolution for each impression. One half of the cylinder is lower to allow for the return of the type bed which has a short travel.

The stop cylinder machine is essentially an English one, and commonly known as a " Wharfedale." There is a small cylinder in this class of machine and approximately three-quarters of its circumference is used for the impression. On both ends of the cylinder, pinions are meshed into corresponding racks on each side of the type bed. One of the gears on the cylinder runs loose and the other is fixed with the teeth on the under portion cut away. This allows for the return of the bed after the sheet has been printed. Fig. 4 shows a stop cylinder machine driven by a variable speed slipring motor of 3/1.5 h.p., 725/360 r.p.m.

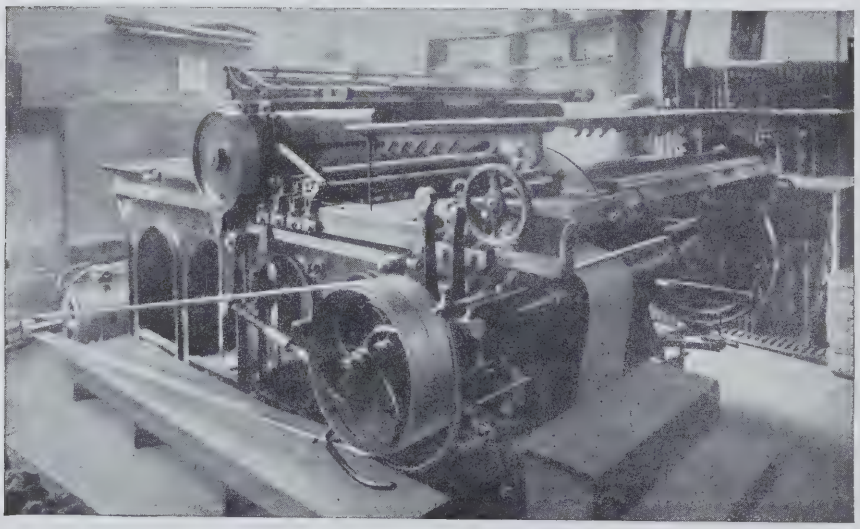

Fig. 4.—A double royal size stop cylinder machine driven by a variable speed slipring motor, type " M," 3/1.5 hp., 725/360 r.p.m.

The two - revolution machine is now generally accepted as the standard type of cylinder printing machine for general work. It derives its name from the fact that the cylinder makes two revolutions for each sheet printed. During one revolution the sheet is printed, after which the cylinder rises clear of the forme to allow the return of the carriage to deliver

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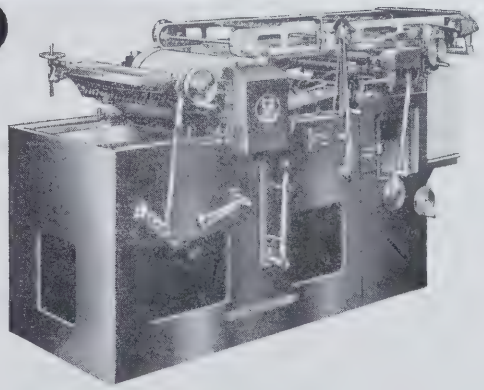

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the sheet on to the "flyers." With this type of machine the cylinder is not actuated by the bed; both cylinder and bed are driven independently but in step with each other.

In Fig. 5 is shown a two-revolution printing press driven by a similar type motor of 3/2.25 h.p., 940/700 r.p.m.

It has not been the author's intention to describe the different makes of printing machines in detail, but merely to give a brief description of the machines in use in the average printing establishment before going on to give information concerning the types of motors available for driving such machinery. It should be understood that the types of machines differ appreciably. Hand feeding of printing machines is rapidly being superseded by automatic feeding. There are also rotary printing presses on which the daily newspapers are printed at a very high speed, but this type of machine is outside the scope of the present article.

It is now intended to consider certain types of motors which are available for driving the composing and printing machines which have now been described briefly. The Linotype and Intertype composing machines require to be driven at a constant speed only as in the case of guillotines, folders, stitchers and small platens, and the squirrel-cage motor being the simplest type of electric motor available is the one most commonly used. The horse power requirements are low, many of the machines being driven by fractional horse power motors with direct-on contactor type starters. Both the Linotype and Intertype machines, already seen in Figs. 1 and 2 respectively, are driven by $\frac{1}{2}$ h.p. motors. Guillotines are, of course, a heavier class of machine, but for general printing, a 36 in. wide machine may be driven by a $2\frac{1}{2}$ h.p. motor of the squirrel-cage type, arranged for direct-on starting by means of a push-button operated contactor starter provided that the Supply Authorities' regulations will permit such starting.

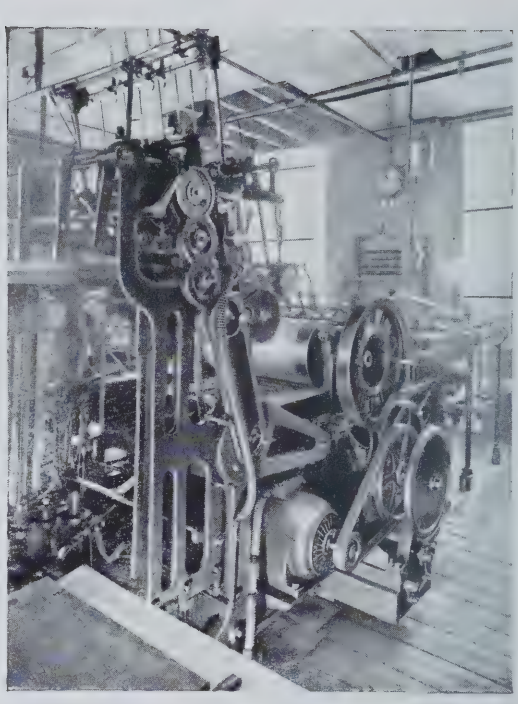

Fig. 7.—No. 6 Miehle printing press with automatic feed, driven by a 3/1 hp., 1830/610 r.p.m., type "CFT" motor which is neatly fixed under the machine frame.

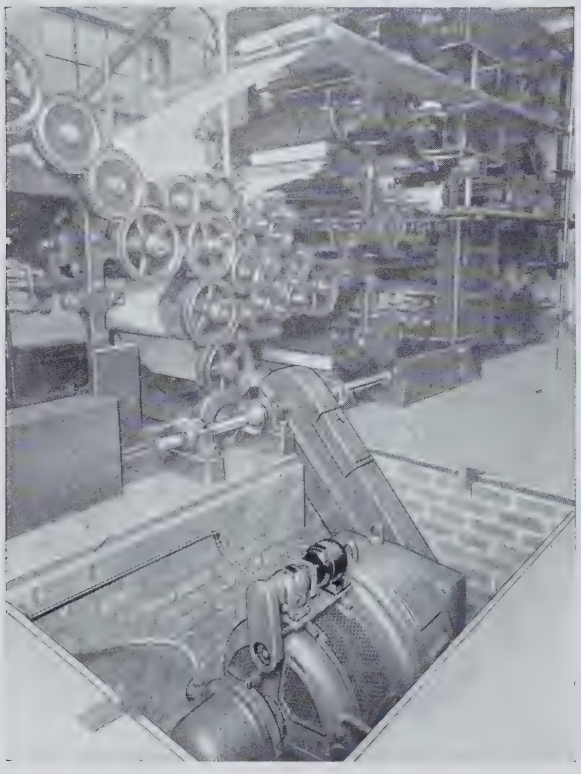

Fig. 6.—A 30 hp., 1300/130 r.p.m., type "CH," variable speed a.c. commutator motor driving rotary newspaper press. Note pilot motor for operating brushgear to provide remote speed control.

Monotype composing machines, platens and flat-bed printing machines usually require speed variation so that the speed of the machine may be conveniently varied to suit the class of work being undertaken. The speed range required is usually of the order of 2 to 1 and seldom exceeds 3 to 1. Up to a few years ago the usual method of drive for such machines was a slipring motor with rotor resistance control. This method of drive has given satisfactory service in many instances, but it has the disadvantage that the power consumption throughout the entire speed range remains constant so that the efficiency falls rapidly at the lower speeds.

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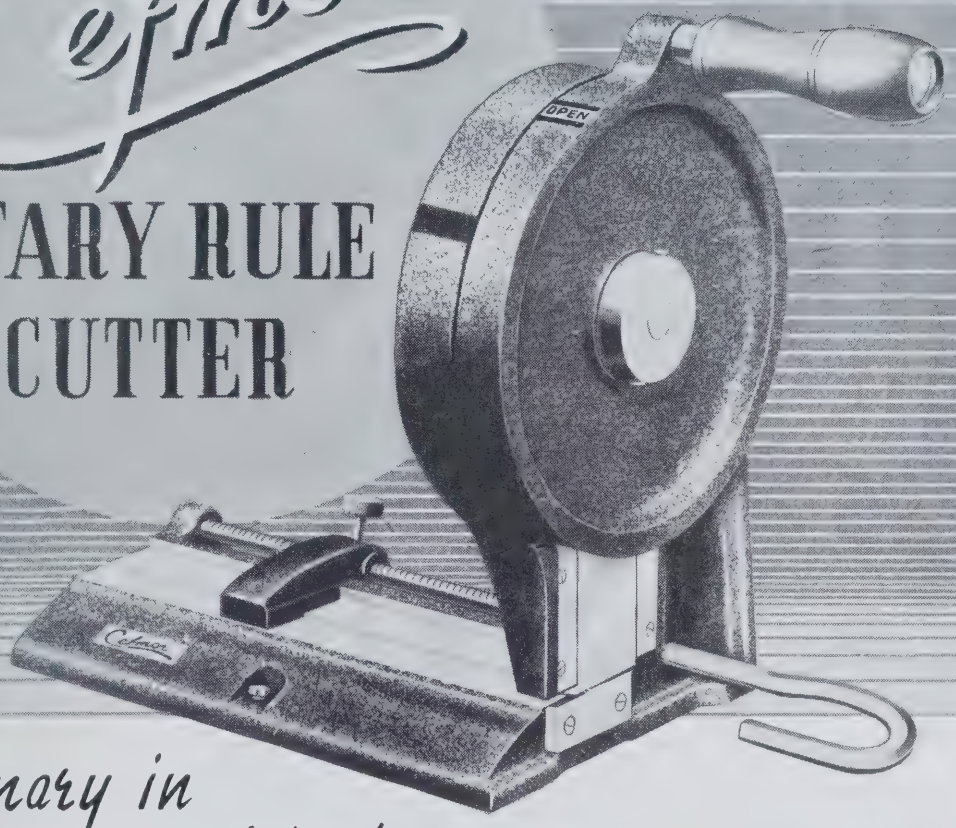

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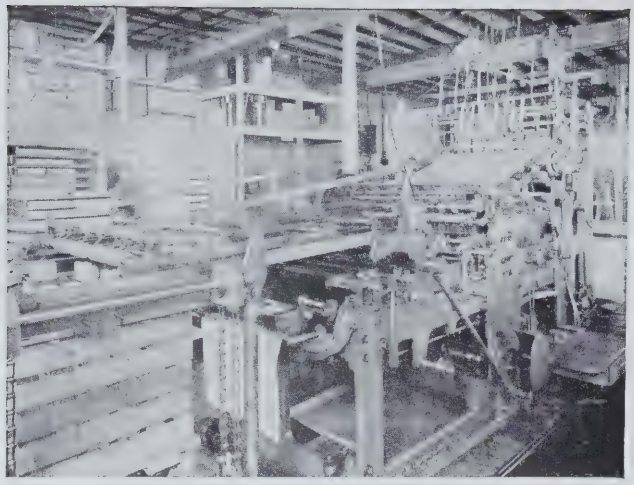


Fig. 8.—Shows the same machine as Fig. 7 and the speed regulator and push-button station can be seen near the operator's platform.

the regulator is not injurious to the work being carried out.

Figs. 4 and 5 show slipring motors driving flat-bed printing machines, and in the case of Fig 5 the drum controller can be seen fixed to the printing machine frame, and the push-button operated contactor is secured to the overhead girder so that the operator has full control while standing on the operating platform.

The general practice to-day is to use a type of motor that has a more suitable load speed characteristic than the slipring motor, and ranges of both three-phase and single-phase motors have been developed to meet particularly the requirements for the drives of Monotype composing machines, platens and flat-bed printing machines.

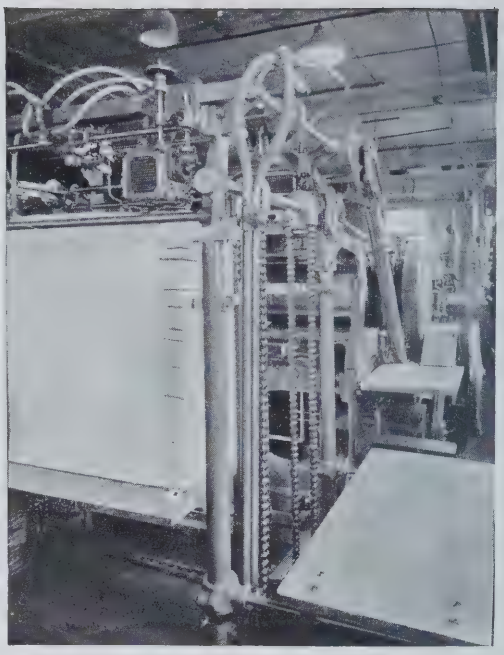


Fig. 9.—No. 4 Miehle printing press with automatic feed, driven by a 5/2½ hp., 1900/950 r.p.m., type "CFT" motor.

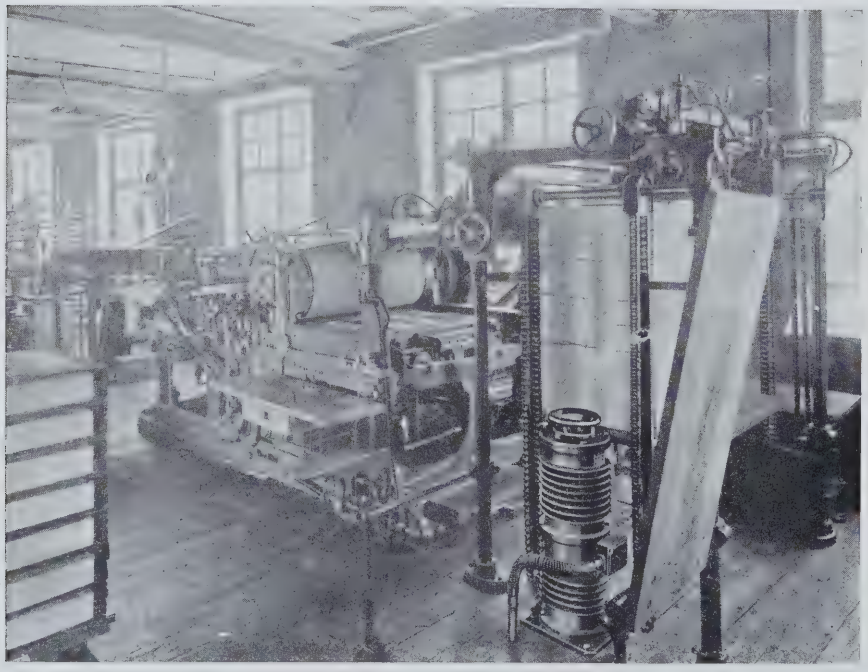
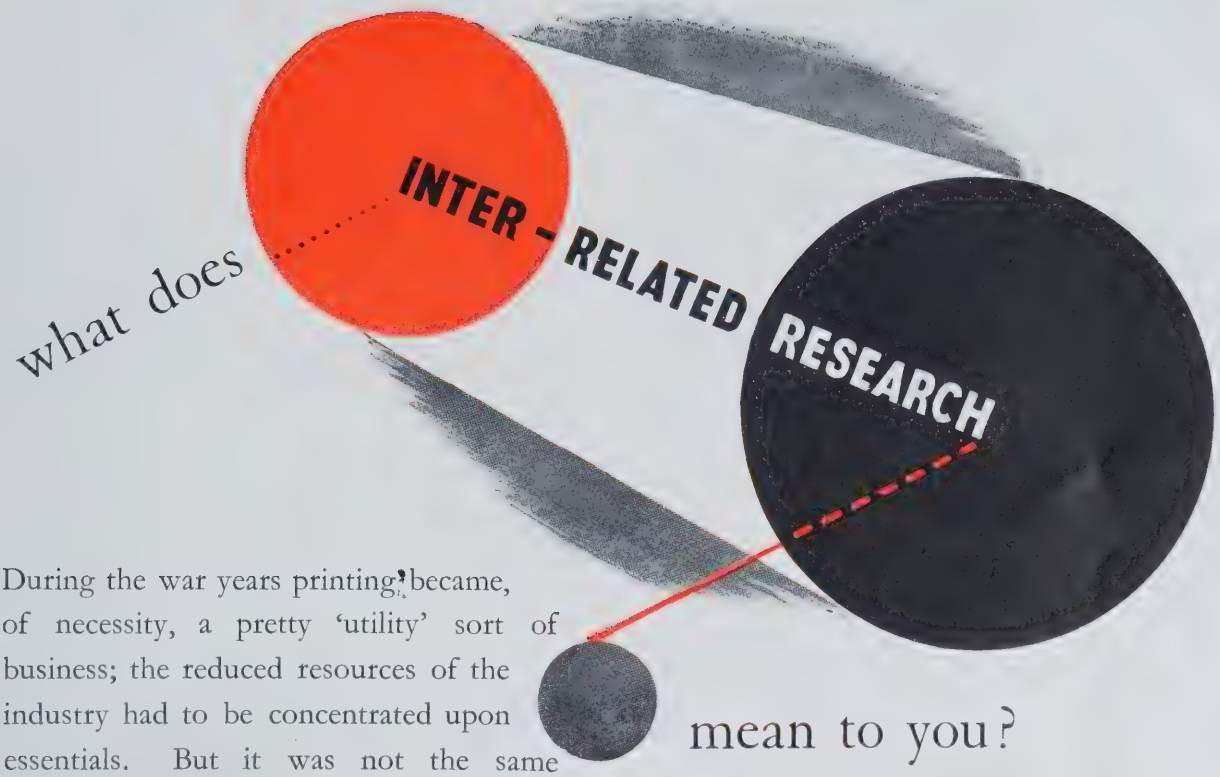


Fig. 10.—Shows the same machine as Fig. 9 from a different angle, so as to show the "J.M.T." speed regulator with push-button station to give "Start," "Stop" and "Inch" control.

The type "CH" A.C. variable speed commutator motor is the most suitable type of A.C. three-phase motor available for the drive of flat-bed and rotary printing presses since the shunt speed characteristics of the motor are such that the speed remains practically constant irrespective of the load. The speed control does not entail any external loss and the efficiency of the motor is relatively high over the whole speed range whilst the power factor throughout the major portion of the range is higher than for an induction motor. The speed is adjusted very easily by simply moving the brushgear and this can be done either locally by means of a handwheel secured to



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the motor or remotely. Where remote control of the speed is required, this can be accomplished either mechanically by means of wire rope, chains or shafts, or electrically by fixing a small pilot motor on the main motor.

Fig. 6 shows a 30 h.p., 1300/130 r.p.m., type "CH," A.C. variable speed commutator motor driving a rotary newspaper printing press. The pilot motor for operating the brushgear in order to provide remote control electrically is clearly seen, mounted on the main motor.

The range of type "CH" motors has been considerably extended so that a motor of this most suitable type is now available for practically the whole range of printing machines which require speed variation. The application of this type of motor should first be considered in preference to any other A.C. variable speed motor.

For the smaller printing machines requiring a variable speed three-phase motor up to and including 3 h.p., there is the "CFT" range of commutator motors, the speed of which is controlled by means of a separate induction regulator. This type of motor has similar characteristics to those of the "CH" type, but with a greater rise in speed with reduced loads at the lower speeds settings of the regulator. The "CH" type of motor has, of course, the advantage of being self-contained in a single unit, but nevertheless the type "CFT" motor with its separate speed regulator has a definite field of application on the smaller flat-bed printing machines, platens and Monotype composing machines.

The "CFT" motor has a primary winding in the stator connected to the three-phase A.C. supply and a direct-current armature with fixed commutator brushgear and no sliprings. The commutator winding, which constitutes the secondary of the motor, is connected to the secondary terminals of the regulator, while the primary terminals of the regulator are connected to the same three-phase supply as the primary winding of the motor. The speed regulator, which is entirely separate from the motor, can easily be located in the most convenient position to suit the operator. The regulator is built as a pedestal for floor mounting in a vertical position, but, if preferred, the regulator can be supplied with special feet secured to the end plates for horizontal mounting. Speed variation is brought about by merely turning a hand wheel, and pre-set speed control is possible as the motor can be switched on with any setting of the regulator. The starting equipment need only consist of a push-button operated contactor which should be located near the speed regulator so that the operator has full control of the machine from the most suitable position. The illustrations in Figs. 7, 8, 9, 10 and 11 show printing machines driven by type "CFT" A.C. three-phase, variable speed commutator motors with separately mounted type "J.M.T." speed regulators. These photographs clearly indicate the convenient way in which the speed regulator can be located, together with the push-buttons so that the operator has full control from the chosen position. These photographs also show how the type "CFT" motor can be accommodated under the machine frame, and so avoid encroachment on more valuable space around the printing machinery.

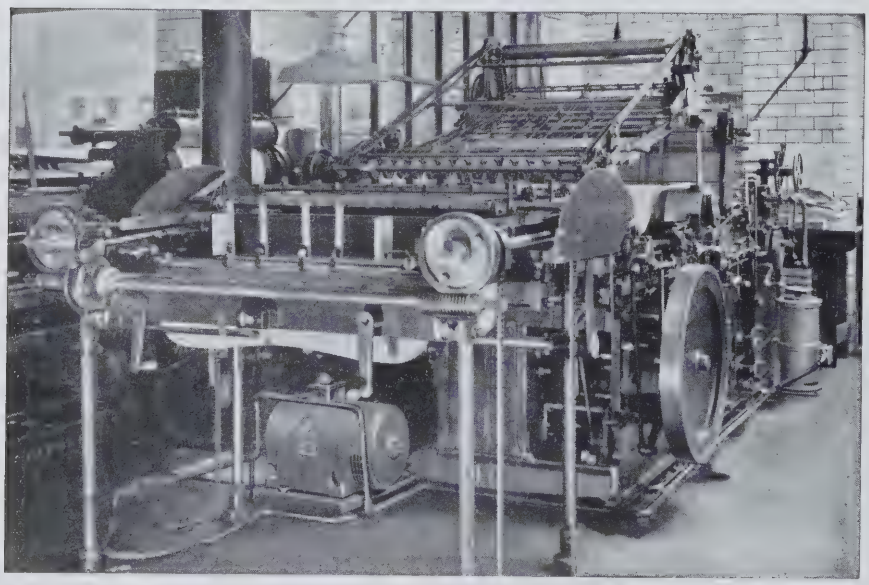

Fig. 11.—Type "CFT" 3/1 hp., 1860/610 r.p.m. motor driving a stop cylinder letterpress machine. Both motor and speed regulator are clearly shown.

For certain printing establishments where only a single-phase supply is brought in, this Company has available a range of variable-speed repulsion motors known as the type "CFHS." The load-speed characteristics of this range of motors are substantially those of a D.C. compound wound motor where there is a noticeable rise in speed between full-load and no-load for a particular brush setting. This rise in speed, however, is not nearly so pronounced as in the case of certain other motors and, because of this, it is possible to use type "CFHS" motors on drives embodying a clutch or fast and loose pulley drive since they

will take up the load without serious snatching, and they will not over-speed when running light. This type of motor has been applied with success to the drive of small platen presses and speed variation is accomplished by mechanical manipulation of a lever handle which is attached to the brushgear. The handle is provided with a spring plunger which engages with a rack on the end-shield periphery thereby locating the brushgear for any desired speed. Adjustable stops are fitted in order to limit the brush movement to that necessary to give the desired speed range.

It should be appreciated that it is necessary to make a careful choice of the type of motor and control gear in order to obtain the best possible results from printing machinery. Any haphazard application of electric motor drive is not going to give the best results. This Company has equipped a large number of printing works, and it should be appreciated that the experience gained by its engineers is at the disposal of all those who require advice and guidance in making a right choice of equipment to meet their particular requirements.

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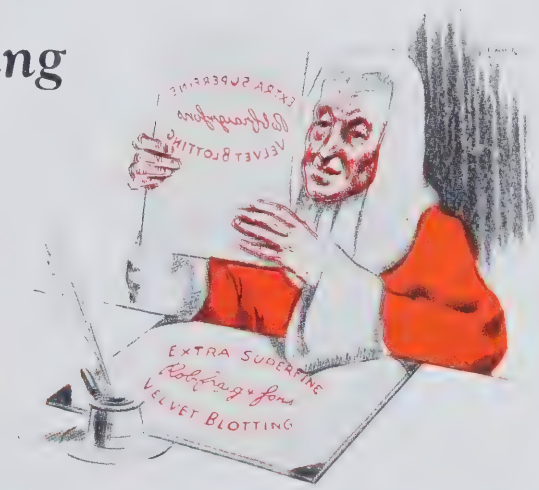

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IT is not to be expected, or desired, that the printer should have a thorough working knowledge of Photography and Process Engraving, but, it will often be found extremely helpful if the modern printer has an elementary knowledge of these two printing helpmates.

Perhaps the best thing to consider at the outset will be what style of photograph is best for reproducing for block and gravure purposes. Firstly, the print should be black and white in preference to one sepia toned, and should be on a glossy surface paper. Either just the natural glossy surface, or, with the high mirror gloss. Matt finish papers are not desirable because the paper finish dries dull and the fine details in the shadows are sunk in, and lost. If you wish, you can make an interesting experiment by soaking a matt print in a dish of water. There you will quickly see that a lot of detail is revealed that becomes lost in the paper base when the print is dry. Grained surface prints are also not suitable, because the grain will often be accentuated by block reproduction, and the finished illustration will look as if it has an attack of the measles. The print, then, should be in black and white—of fair brilliance—with open shadows that show up the details—and high lights that are brilliant without being chalky white. If you order your prints from a good photographer and mention that they are required for reproduction purposes, he will know what to supply.

How are you to get your photographs for illustrating catalogues, leaflets, books, advertisements, etc.? If your customer supplies them, then there is no further difficulty, except the fact that the prints may not be suitable, or may be cracked, or faded. Here, you may find that owing to the heavy cost for artist's work and re-copying to make them into suitable originals for reproduction, that, which you thought was going to be a profitable job, often turns out just the opposite. If the photographs are not supplied, then it may rest with you to supply them. Do not make the mistake of thinking that because you have a camera "with a good lens" that *you* are fully equipped to turn out work of a sufficiently high quality for reproduction purposes. Your own camera may be good enough to take pictures for your own record purposes, but a different type of camera and lens is required for nearly every branch of photography. Stock photographs of practically every subject under the sun can be supplied by press agencies at a fair figure. These may not suit your requirements, for often the customer's product itself has to appear in the picture. For the taking of these special photographs, there are commercial photographic studios who specialise in this type of work. The charges vary according to the style of photograph and how many models are included in the picture. Photographers are also sub-divided into various classes and divisions. There are those who specialise in portraits, commercial work, views, architecture, shipping, and general work. Again, there are photographic studios who have a process engraving department included, and they will carry out the entire job for you.

It must not be thought that because you have a good photograph that it is ready for the blockmaker. Often some extra re-touching or artist's work is required before a good block can be made. This is the work of experts, and can make, or mar, the results. The cost depends on the amount of work to be done, and often can cost more than the cost of the original photograph.

Coloured illustrations can be reproduced by blocks, or, colour gravure or litho processes, from hand coloured photographs, or, from coloured original prints made by photographic means, by the Dufay, Vivex, or three-colour Carbro processes. Two, three, or four-colour blocks can also be made by direct photography of the originals. The process chosen will depend on the final result desired, whether it is to be an exact replica of the original, or whether a fair copy in colour is sufficient. Stock blocks for both monotone and colour printing can be obtained from some block makers for either line or tone printing, but very rarely can these be utilised as they seldom fit in for size, screen, or picture suitability.

The guide given on page 202 will enable you to tell which is the best process to use for the reproduction of various originals.

The following gives a brief resumé of the methods of blockmaking and will be found useful to increase the printer's general knowledge.

LINE BLOCKS.—These are made by mechanical methods and are exact replicas of any original

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" line " subject drawn in black and white or any colour. Only lines are reproduced by this process, half-tones are not. The method of line block making is firstly to copy the original sketch down to the size that the finished block is required. This negative is opaque in the white parts and perfectly clear where the lines are shown. When dry the negative has to be printed on to a piece of metal which is to form the finished block. A piece of zinc is used for this, and is coated with a solution of albumen and ammonium bichromate, and dried by whirling round in a current of warm air. The negative is now placed in a printing frame with vacuum air pressure to ensure perfect contact when the coated metal is placed in contact with it. Powerful arc lights print the line-drawing image on to the plate, which was made sensitive to light by the amm. bichromate. After the requisite exposure time, the zinc plate is taken off and rolled up with an ink-covered roller. When this is finished, by placing the zinc plate under running water and gently swabbing with cotton-wool, the excess ink is removed and the insoluble line drawing is shown left on the zinc. Then, after dusting over with dragon's blood (a powdered bitumen substance—not a real dragon's blood) and, heating to form a resist over the image, the unwanted metal is etched out with acid. Several applications of this, and " routing " out of the large expanses of unwanted metal, and the line block is ready for proofing and finally mounting type high.

Half-tone Blocks.—These are made for reproducing the half tones (or varying light and shade) of photographs or wash drawings. The tones are reproduced by breaking up the image into a series of dot formations and give to the eye an impression of continuous tone. This is not really so, for if you examine a proof of a half-tone block under a powerful glass, you will see that it is a dot formation only. With coarse screen blocks, as used by newspapers, you can almost see the dots with the naked eye. The dots are produced in a half-tone block by putting a ruled screen in front of the sensitized plate during the copying of the original picture on to the negative. The exposing of the negative for a H.T. block requires more skill on the part of the operator than that for a line block, because where with a line drawing you only had black and white, you now have many depths of tone to consider. After the negative is made, it is printed in similar style to the line negative, but this time the metal is sensitized copper instead of zinc. The coating not affected by light is then washed off, and the plate soaked in a dye to show up the now dot formed image. Upon transfer to an electric etching machine, the unwanted copper is dissolved. Still another etching is necessary, and some hand tooling by an expert. The bevel is then put on the edge of the block to facilitate mounting, and after proofing and passing, it is mounted type high. Colour half-tones are prepared in somewhat the same way, except that in making the negatives, filters are used to keep back various parts and only allow certain colours to pass through, so that each block is a reproduction of some of the colours of the original, which, when printed over each other, go to make a reproduction of the original.

These are the two chief processes that are likely to interest the printer, except photogravure, which is such a vast subject that it would require a special article to itself. If the printer takes an intelligent interest in the work of those professions which are co-operating to help him, he will find that his work has improved, and become far more interesting.

ORIGINAL	HALF-TONE	LINE
A PHOTOGRAPH	O.K.	USELESS
PEN AND INK LINE DRAWING	NO USE	O.K.
WATER COLOURS	O.K.	NO USE
SCRAPER BOARD WORK	LITTLE USE	O.K.
PENCIL DRAWINGS, CRAYONS, ETC.	O.K.	O.K.
DRY POINT, ETCHINGS	FAIR	FAIR ONLY
MAPS AND PLANS	FAIR	USUALLY BEST
OIL PAINTINGS	GOOD	USELESS
WRITING, TYPE AND TYPEWRITING	USELESS	O.K.
COMBINED WASH DRAWING AND P. & INK	BEST	NO
CHARCOAL	O.K.	O.K.
ENGRAVINGS	O.K.	POOR

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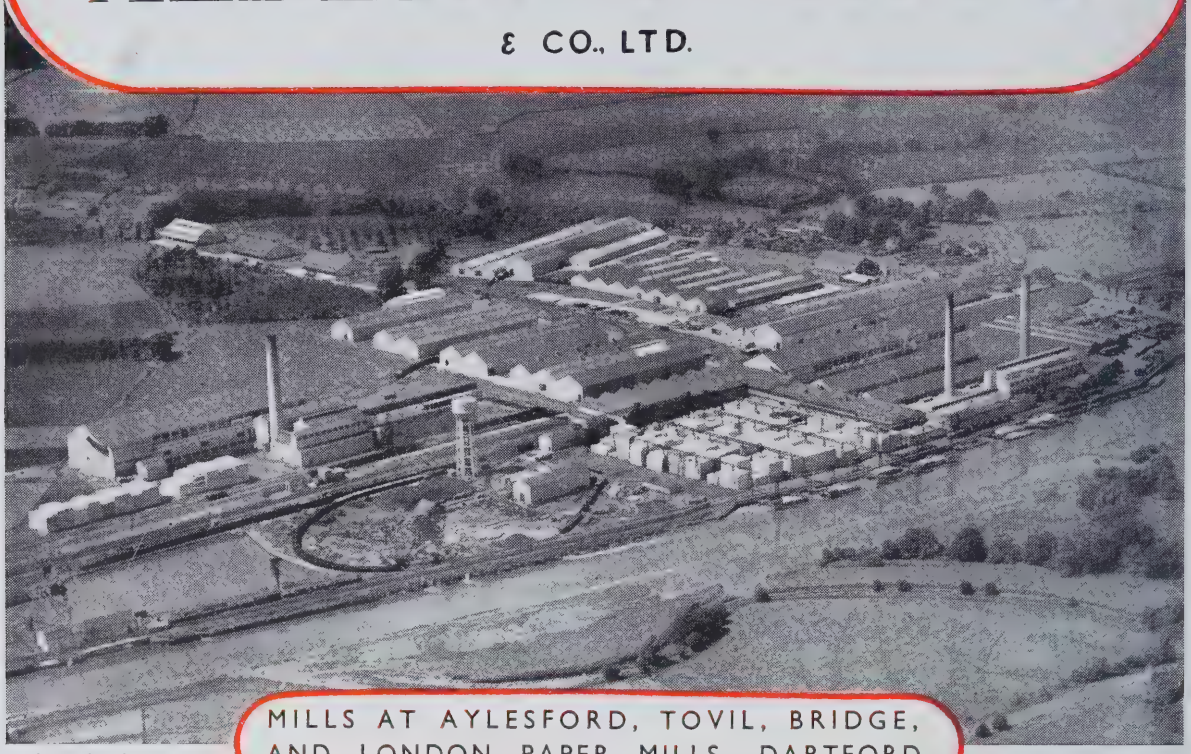

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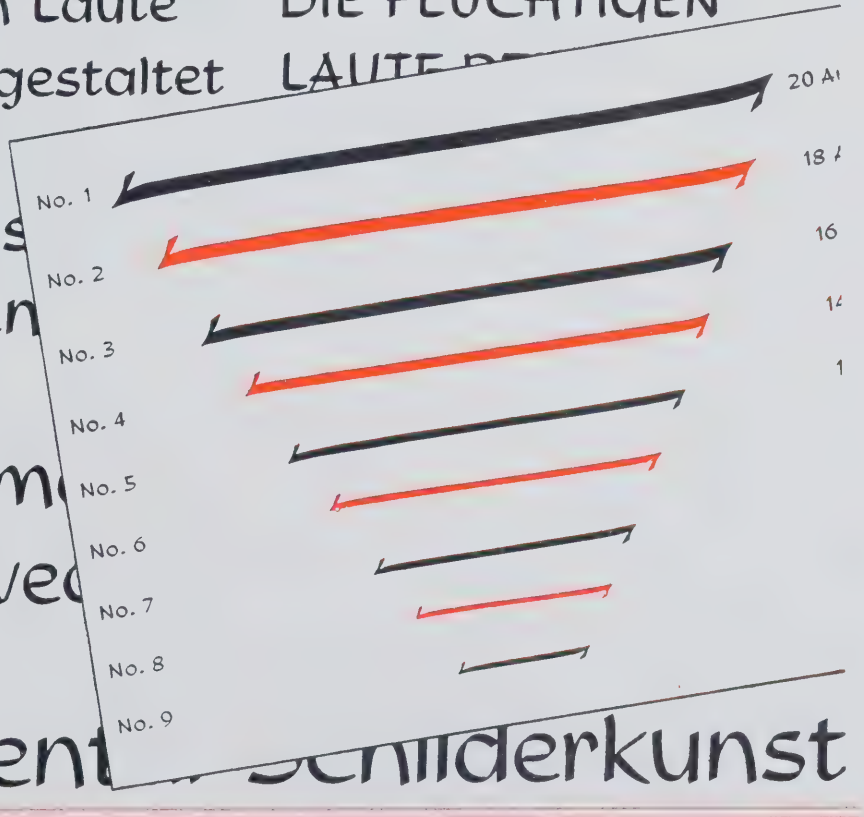
GEBILDE, IN DENEN DIE FLÜCHTIGEN



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Mercury m
be observe

Monument
Schilderkunst

A general view of the buildings of the Windmill Press at Tadworth, Surrey.

DIESEL POWER at the WINDMILL PRESS

THE visitor to Messrs. Heinemann's Windmill Press, at Tadworth, in Surrey, is at once impressed by the striking beauty of the building and its tree-girt, daffodil-strewn lawns, with goldfish pools and gravelled paths suggesting that the red-brick Georgian building might be a county residence or a school, rather than a busy publishing concern which employs 250 people, and from whence issue 6,000 books a day, as well as a number of weekly magazines.

Built in 1928, to the designs of Lord Gerald Wellesley, now the Duke of Wellington, the Press is situated in secluded country some four miles from the village of Tadworth, and in most respects it is self-contained. The motive power for the printing machinery and the heat for the glue and metal pots is obtained entirely from electricity, generated on the premises. In view of the cultured dignity of the general design, it is especially interesting to note that diesel engines were chosen as the power source. The proprietors had to consider not only reliability, but noise, vibration, and objectionable smell. A modern diesel generating installation was found to fulfil the high level of their requirements in all these different directions.

The building is in the form of a square U, with a height of two stories. The left-hand wing contains the printing presses, the centre portion the power house, and the bindery and composing rooms are on the right. Large steel windows with rounded tops give an impression of lightness and airiness.

In the two main departments of the Press there are about 75 electric motors, ranging from $\frac{1}{4}$ h.p. to 15 h.p. The system adopted is 230 volts D.C., permitting ease of speed regulation.

Book Production

The first process in producing a book is to set the type. In the composing room Messrs. Heinemann use both Monotype and Linotype machines. The Linotype employs brass matrices to cast a complete line of characters in a solid block of metal, while the Monotype keyboard operator causes holes to be punched in a roll of paper. These rolls are taken to a separate casting machine, which casts single letters using pneumatic means of operation. Both the Linotype and the Monotype need small electric motors and electric heat for the metal casting.

When the type is made up into formes, printing is either done directly from the type itself, or, in certain cases, from "stereos," or type-metal facsimiles made from the completed forme. These are produced in the foundry where "flong"—a soft board—is pressed on to the type, and receives the impression on its surface. Molten metal is then used to take a further impression of a complete page from this matrix. Here again electrical heat is required.

The completed type matter is then taken to the

Paper

Alternate layers of tissue paper and blotting paper are all that are used in preparing wet flong for stereo making. After a thorough soaking, the flong is laid down over the original block, beaten into the block face with a stiff brush and placed in a steam press for drying. On removal from the press, it is reinforced with thick paper where necessary, put into a box, and molten stereotyping metal poured over it. After cooling the box is opened and the metal removed. The stereo is found to be a faithful copy of the original block. All blocks, original or stereo, print to perfection on the ideal surface of WESTFIELD *Tested* PAPERS.

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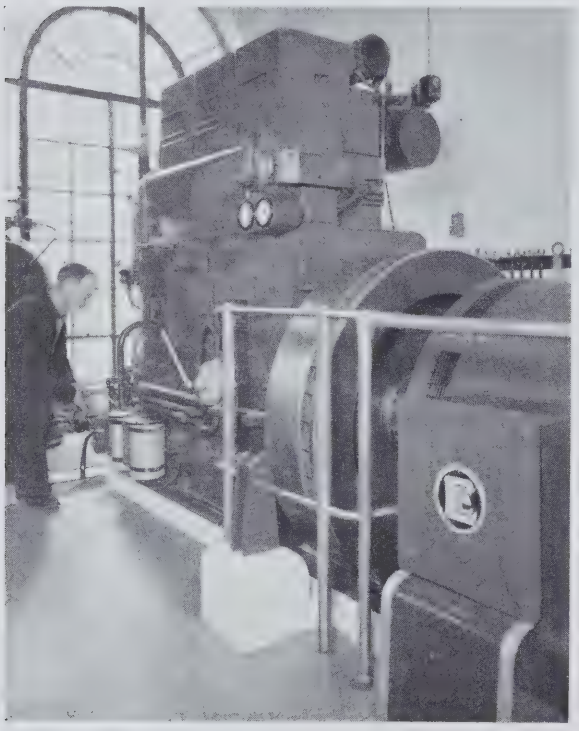
presses. For magazine work the Windmill Press employs a rotary machine, while for the majority of its work—that concerned with the high-quality novels, plays, and text-books which they publish—flat-bed Miehle machines are used.

There are three single-impression presses, and two large double-impression presses of this pattern, while three and four-colour work is done on platens and other smaller machines. Each press has an individual motor drive, and in the machine-room there are bundlers, or light presses, actuated by compressed air supplied from an electrically-driven compressor. Book paper is printed with 16, 32 or 64 pages on a single sheet, and these large sheets of paper, in stacks, are then taken to the bindery.

They are first folded on one of three special machines, which are extremely fascinating to watch. The sheets are folded and cut at a very rapid rate, and the output of the machine consists of "signatures," or small bundles of folded printed



One of the two "English Electric" "K" type Diesel engines driving 110 kw. D.C. Generators in the Power House of the Windmill Press.

pages, of which some 16 or 20 form the complete matter between the covers of a book.

In order to ensure that the collators pick up every one of the signatures in the correct order, each one has a small black dot printed on what will be the back fold. When the correct number are assembled together in the correct order, these black dots can be seen progressing from left to right and downwards in order, thus ensuring that every section is present and in correct order. Girls collect these from the folding machines and place them in a bundler, where they are squeezed together by pneumatic pressure. They are then transferred to the sewing machines, where ingenious mechanical methods are used to apply tapes and to sew each of the signatures together and to the tapes. All these machines have individual electric drives.

From there the book, which now shows signs of appearing in a completed form, is taken to a three-knife guillotine which trims the three sides, that is, those other than the back, which is now sewn, to the correct dimensions.

In order that a book may lie flat when opened, and to enhance its appearance and improve its strength, it is necessary that the back should be rounded, and here a machine called a "rounder and backer" is used to produce, by heavy mechanical pressure, the necessary roundness of the spine.

The book is now ready for binding, but the cover, or, in technical terms, the "case," has been in course of production on a separate row of machines while the book itself has been following the progress outlined above. Thin millboard is first cut on a special rotary guillotine, and then the cloth is applied and glued down by another machine specially developed for this purpose. A blocking machine impresses the name in gold-leaf, together with a die-sunk publishers' imprint, and the cases are now ready to be taken to the casing-in machines to meet the books themselves.

The casing-in machines employ an extremely ingenious mechanism, whereby an operative feeds the books and the cases into the machine, which then glues and presses them together and produces an article which has to undergo only one remaining process—that of simple pressure under a pneumatic press—before it is ready for distribution and sale to the public.

All the machines are driven electrically, and as well as the necessary D.C. motors many of them employ electrically-heated glue pots, and in some cases small compressors or suction pumps for paper feeding purposes are also used.

The Power House.

It will be seen from the brief description outlined above of the processes involved in producing a book, that in the case of a Press where electric power is used throughout, and where—as in the case of the Windmill Press—continuous working is adopted, from Monday morning until

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Friday evening throughout each day and night, the supply must be entirely reliable and free from fluctuations which could upset any one part of the process and thus hold up every other department. For instance, prolonged low voltage on the elements used for heating the metal would upset the operation of the Linotype and of the foundry; while high voltage could cause considerable trouble with rotary machinery involving paper handling.

The power house, which supplies the whole needs of the Press, except for a standby A.C. supply purely for lighting at weekends, is equipped for its main source of current, with two "English Electric" 3-cylinder "K" type diesel engines, driving 110 kw. D.C. generators. One of these engines was installed during the War, and for three years ran entirely alone, and never at any time gave any sort of trouble or needed repairs other than routine overhauls. There are three other small sets in the power house, of 50 h.p., 20 h.p. and 8 h.p., which have been used for emergency purposes, and for occasional weekend running, but the load on the plant is now exactly full load for one of the "English Electric" generating sets, and the rapid starting facilities available—the engineers mentioned that half-a-minute is all that is necessary to bring on a new set in an emergency—mean that it is now considered that the power house is completely equipped for regular reliable running. The second set was installed early in 1947.

The engines follow the Company's standard design for this type of equipment. The later model has oil governing, while the earlier engine has the standard type of mechanical governor, both of which have proved sufficiently sensitive to give a voltage variation of not more than plus and minus $2\frac{1}{2}$ volts under all loading conditions.

Starting is by compressed air, and cooling water is obtained from a pleasantly designed pond, admirably suited to the rustic surroundings outside the engine room.

The exhaust gases from each of the two "English Electric" diesel engines pass through Clarkson boilers on their way to the atmosphere, and this method of utilising the heat which would otherwise be wasted enables the whole of the buildings to be heated by hot water from this source.

Fuel oil is stored in underground tanks in the grounds, and a stock of 3,600 gallons is normally kept. Above each engine is a service tank, holding approximately 60 gallons, which is filled by hand from the main tanks.

The consumption per unit generated is approximately 0.6 lbs. of fuel per kwh, and while certain factors make it difficult to give an exact figure of the cost per unit, this is estimated at an all-in cost of $1\frac{1}{2}$d. per kwh.

For maintenance purposes, the Press employ one specialised engine fitter, who, on the occasions when major overhauls are necessary, draws assistance from the maintenance staff. One driver per shift is employed to operate the power house.

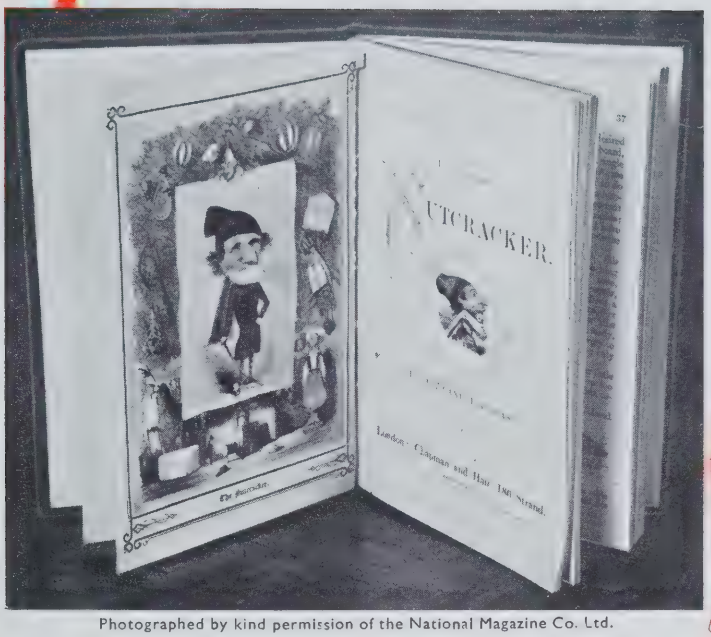
Neither noise nor vibration is in any way objectionably noticeable, even when standing close to the diesel sets, and a very high standard of decoration and general cleanliness is maintained in the engine room without undue difficulty.

A flat back switchboard is installed, and for the newest "English Electric" generating set an "SKB" circuit breaker of the same Company's design is installed, together with the necessary overload reverse current protection, isolation knife switches, and indicating instruments.

The Chief Engineer of the Press, Mr. R. A. Adams—to whose courtesy we are indebted for facilities for writing this article and for taking the photographs—paid tribute to the reliability of the generating plant during the war years, when the one "English Electric" generating set, which at that time was the sole main source of power, ran uninterruptedly without ever giving trouble, for some three years.

A view of part of the Bindery at the Windmill Press.

1847



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For sleeping at a children's party, where he had taken his daughter, the great author Dumas had to pay a forfeit to the twelve laughing youngsters who awakened him. Offers such as the theatre and sweets were rejected and all demanded that he should write a story. This story was the ever delightful "Nutcracker" printed in 1847. Many other famous men, including our own Lewis Carroll, have contributed to the large range of children's books available to-day. Modern printers of children's books prefer Bruce's Featherweight — it's Fluffless!

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Preparing GUM ARABIC SOLUTIONS for Lithographic Coatings

by A. G. AREND

THE preparation of solutions of gum arabic for lithographic coatings is both a complicated subject and also one upon which relatively little literature has appeared, although ample information is available on the chemical and physical properties of the gum itself.

In actual practice, many of the grades and qualities of the gum as described have little bearing on the lithographic process, and pieces of straw, bark and other undesirable matter, besides minute proportions of calcium, potassium and other minerals, may be present.

Apart from this, the season of the year in which it has been gathered, and also the weather conditions which prevailed at that time, exert their influence on the chemical composition and quality. Although used since the earliest times, the propperty which gum arabic possesses of becoming light-hardened is not always fully appreciated. A material is generally preferred which is made less easily dissolvable by the action of light. This action proceeds very slowly with the gum even in the absence of light, and in the areas exposed to it light merely accelerates this, so that by exposing a plate to the arcs behind a positive, hardening is enacted.

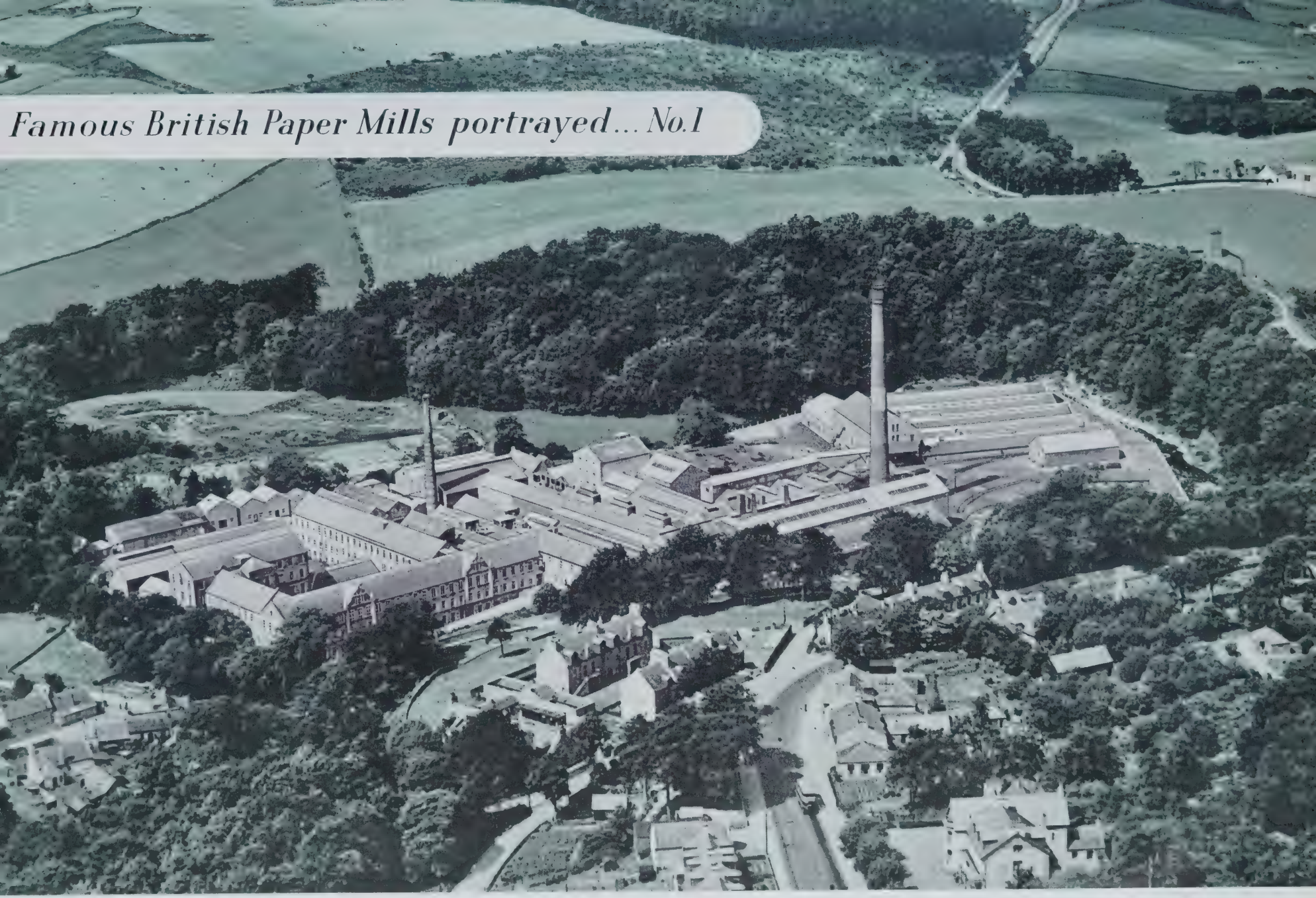
In other words, it is possible for the non-work areas to be rendered more fully insoluble than the work areas in this way. An important feature is that although powdered gum is the simplest to get into solution, the desired crystal-clear amber liquid, which is so necessary for the best coatings, is not thus acquired.

During the powdering of the gum, the bark, dirt and other unwanted materials are likewise pulverised, which makes it practically impossible to obviate the use of elaborate filtering equipment. In some instances, the gum itself appears to be changed by the powdering, and, which is proved by the fact that although solutions from it, and from the selected lump, have comparable densities in Baumé readings, those obtained from the powder are less viscous. It has been considered that this variation in the viscosity of solutions made from the same gum may have some bearing on the formation of cracks in the dried coating, which cause the plate to have minute hair-like irregularities. These are capable of developing out and printing crazed marks throughout the non-work areas which can be serious. This same low viscosity again appears in some of the re-crystallised or purified gums from the same reason, i.e., due to the powdering.

Hot Water and Preservatives, but No Stirring

Although it has long been recognised that gum solutions prepared with hot water deteriorate more readily than when cold water is used, this feature is apt to be overrated. No bad effects will be observed if the gum has to be made into the coating within 24 hours after soaking has commenced, even in hot weather, but if several days have to elapse preservatives must be included. These have to be selected from experience, since although sodium benzoate is very desirable for preserving water-fountain gum solutions, it does not suit for gum coatings, while a number of the sodium salts of chlorinates and phenols are guilty of forming spotty coatings. Some operatives add from 3 to 4 c.c. of prepared liquid carbolic acid per gallon, which is claimed to give excellent preservative action. A certain proportion of all gum arabic is of a disposition which swells, but otherwise is insoluble and, when stirred into solution, disperses a slimy, stringy mass throughout the liquor. As this makes reliable filtration impossible without the assistance of filter aids or pressure filters, the earlier practice of stirring is to be deprecated. A better plan is to suspend the selected lumps in hot water in sacks of four thicknesses of cloth in such a manner that the lumps are just covered with the water, but with the bottom of the sack as far as possible from the bottom of the container. As the dissolving of the gum proceeds the bag may then be raised so as to keep the less concentrated solution for the undissolved gum. This may be continued overnight and, after withdrawing the sack to drain (but without squeezing), the solid contents are thrown out.

Famous British Paper Mills portrayed... No.1



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Paper was first made here in 1751 when Bartholomew Smith, with the aid of six men, commenced operations. The art of paper making has been carried on continuously to the present day and now over six hundred persons are employed. As will be seen from the photograph, the Mill covers an extensive area and is situated in the heart of the country, yet within 9 miles of the City and Port of Aberdeen. An abundant supply of crystal clear water is available from the Culter Burn which runs alongside the Mill, whilst the location provides clean air, essential not only to paper making but also

Where a considerable proportion of gum remains undissolved, it may be utilised for etches or in preparing press fountain water.

Modern Instruments, and Higher Density Solutions

How much difference in the final coating thickness may be attributed to the density and also to the viscosity is still a matter of controversy. For research purposes, much progress has been made since the war stopped, with modern instruments. One of these, with the assistance of radium emanations, can automatically record the specific gravity while the solution is retained within the vessel, i.e., without requiring to remove a sample. The other automatically records the viscosity by use of a stirring paddle, which is actuated by a specially constructed electric motor, the variation of the torque of which determines this characteristic.

By the foregoing method of preparation entirely clear gum solutions with densities as high as 18 deg. Baumé have been obtained, which is much greater than the normal 12 to 14 deg. Baumé usually employed. Whirler speeds, coating technique, and exposure times require to be adjusted to suit where these heavier coatings are used. The reason for so much attention being devoted to preparation features is that there is no relation between density and viscosity with gum arabic solutions.

Solutions prepared from the same gum by different methods of dissolving have been known to show variations in viscosity of as much as 50 per cent. This has not to be confused with the difference which will appear in the final coating, as the addition of ammonium dichromate and ammonium hydrate appreciably reduces the viscosity, and to a much greater extent than dilution with an equal volume of water. The dyes used for colouring the final coating simplify accurate staging-out of unwanted work areas either before or after development, permit easy removal of the coating in the final plate-making operation, and in the dried film on the plate readily show up irregularities and imperfections. As a supplement, therefore, to gum preparation, both dye solutions and ammonium dichromate solutions should be filtered through the best laboratory filter paper, so that uniform coatings will be obtained without any evidence of spots. Even so, it is possible for very finely divided particles to come together in solutions after standing, but which are more easily detected where dye is used in the coatings in the form of definite minute specks. Success, however, can be mainly attributed to the handling of the gum itself, and hence the reason for so much attention to detail.

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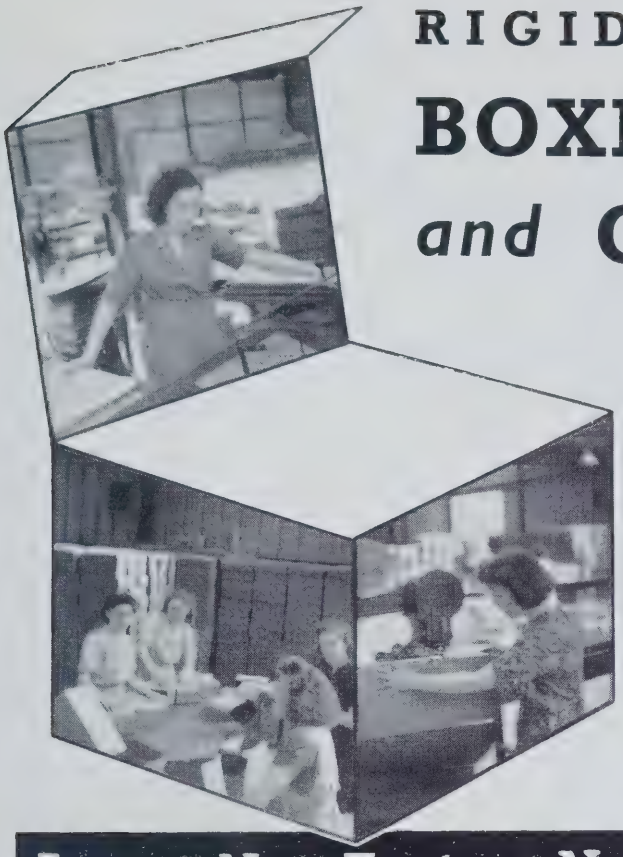

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the-rhythm-of-the-run

● Listen to the sound of the Press ! Stand by that smooth-running Miehle for a moment and listen carefully, lest you hear nothing but noise. For above that pulsation of the pressroom there is an echo which points a moral to successful management. Can you hear it ? It is the-rhythm-of-the-run.

● I heard it years ago, when I was an apprentice and worked a modest platen or fed a hungry wharfedale. I heard it again as I watched newspapers put to bed in the Street that never sleeps. That rhythmic beat can be heard in every pressroom, but how many heed it ?

● It is strange that in the matter of men, machines, and management, it is machines which express the one factor so often missing between masters and men. For in this rhythm-of-the-run there is the echo of Harmony, each part of the press working in perfect unison. There is no friction, no discordant note.

● Listen again to the sound of the Press ! Just as harmony breeds goodwill, so goodwill is the foundation of good management. Much has been done to improve working conditions among printers ; much remains to be done, for the post-war period has created new problems. These will only be solved successfully by a change of outlook and a broader understanding between masters and men. More attention should be given to the psychological aspect, and a code of conduct established that would dispel conventional distrust and suspicion on both sides.

● It is time that certain barriers of tradition were broken down : it is time that intelligent co-operation took the place of departmental conflict. It is time, for example, that the average master-printer made a practice of seeing for himself the prevailing conditions of work. To receive reports from the respective managers may be efficient routine, memoranda dictated by a director in a remote sanctum may savour of authority, but in neither instance will these methods cut the ice of indifference where it exists, or convey adequately the genuine compliment when it is deserved.

● These are occasions for the personal touch. The presence of a master-printer amid the welter of work should be part of his practical interest in the welfare of the staff, a welcome opportunity to utter words that smooth or stimulate. It is a gesture which can generate goodwill and lead to understanding. It is the better way of testing a man's loyalty and his response to reasonableness. It is the way to the heart.

● Master-printer, is your management as smooth-running as a Miehle ? Is there friction or friendliness between departments ? Is there harmony or discord about the place—is it a happy " ship " ? Does the unusual request or the sudden demand cause confusion, or can your staff take it in their stride ? Is there an undercurrent of unrest or can you claim unity of thought and action—teamwork ?

● If you have to search for the right answer to any of these questions, you will find it in the-rhythm-of-the-run !

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PENGUIN BOOKS

There are, we perceive, some changes in the Penguin family. In point of fact, there has emerged from this prolific nest a Double Pelican, the ornithological duplication, as in some Penguins, signifying that this is a double volume priced at two shillings.

JOHN CITIZEN AND THE LAW, a Double Pelican, has been written by Ronald Rubinstein expressly for the people—not for lawyers. It covers a large field and in 350 pages almost every facet of the law likely to interest the general reader receives consideration.

The cover follows the usual Penguin format, with the exception that the design embodies a pair of Pelicans. The issue of one double volume will obviously overcome the annoyance of readers who were able to purchase only one volume of a work previously issued as a pair.

THE PENGUIN FILM REVIEW No. 2 and THE PENGUIN MUSIC MAGAZINE. These are increased by $\frac{3}{4}$ in. in width to $5\frac{1}{8}$ in. and in depth by $\frac{7}{8}$ in. to 8 in., the reason being that both books have such large sections of illustrations it was felt that the additional area would enhance the appearance and give better scope for the illustrations. Prices remain the usual one shilling each. The cover designs are also changed, each having its own distinctive design but both, of course, bearing the famous Penguin emblem.

It should be pointed out that these volumes are only "occasionals," the old style being retained for the usual titles.

The first mentioned *Penguin Film Review* has a cover of yellow and black. The gravure picture sections, however, appear in some cases a little heavy owing to the rather dark tone background on which the illustrations are placed.

This, the second issue of *Film Review*, continues to cover the international field of the Cinema, and a third issue is now also obtainable.

Penguin Music Magazine, with a cover in blue, crimson and black, has an absorbing list of contents for the music lover, including "The Art of Conducting," by John Barbirolli. Also dealt with are books, gramophone records, film and radio music, opera, ballet, concerts in London and a Northern Diary covering Scotland, Liverpool, Manchester and Birmingham, together with 32 pages of illustrations in gravure.

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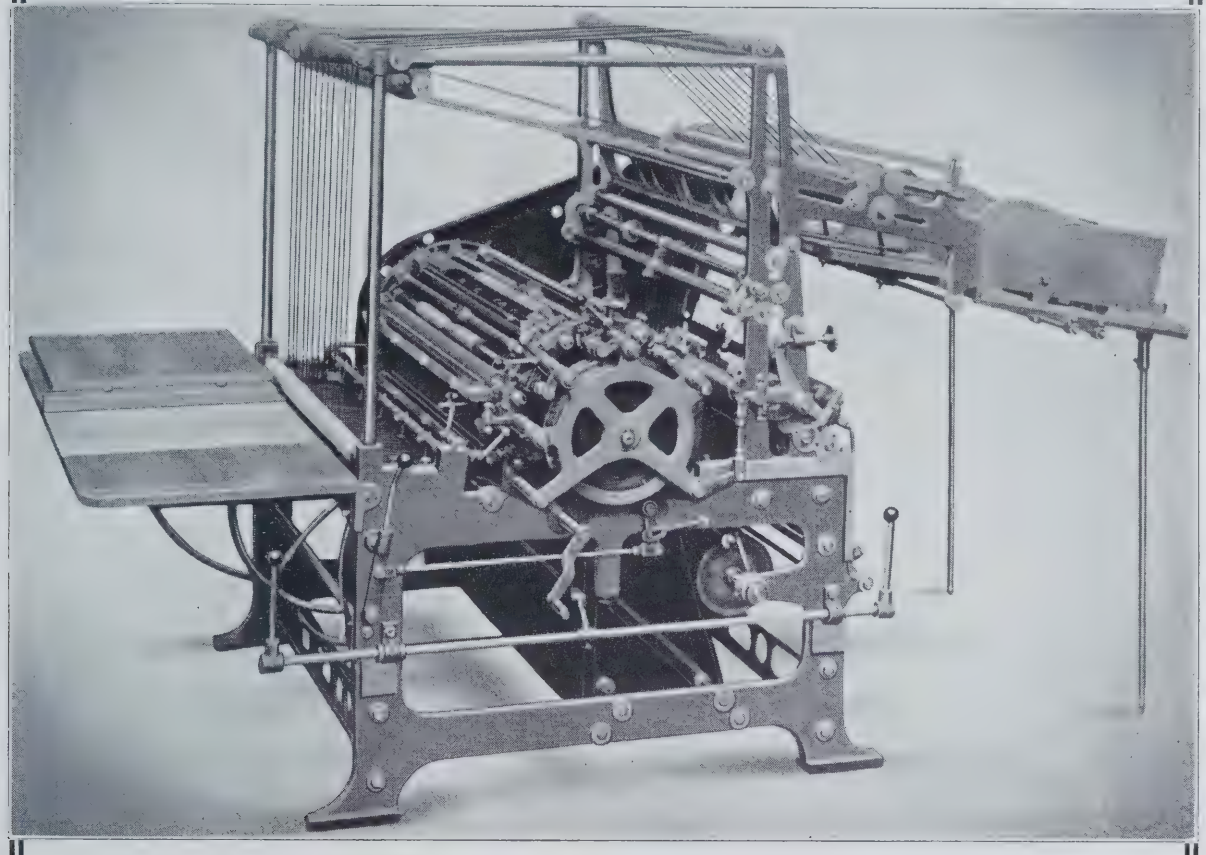

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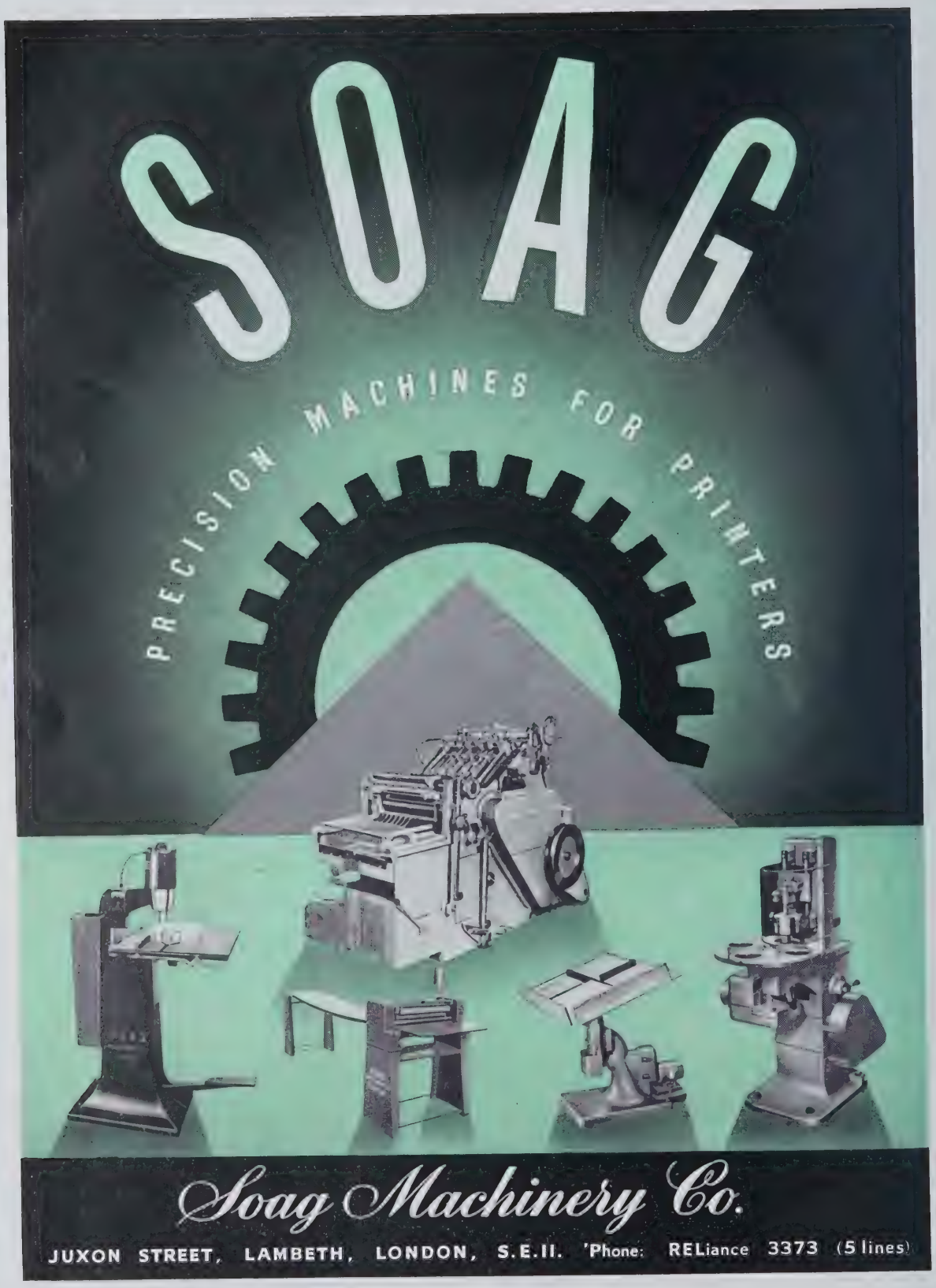
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CONVERTER NOTES

NEW PROCESS FOR MAKING-UP CARBON COPY SETS and SETS OF STATIONERY

Considerable interest has been aroused on both sides of the Atlantic by the new process for making up carbon copy sets, manifolds, etc., invented and patented by the Multiplex Company, of Lytham St. Annes, Lancs.

Clean, simple and easy to operate the process offers distinct advantages to users as well as to binders. A feature which will appeal particularly to users is that sets made up by this new process are as clean on the glued edges as if guillotine trimmed; single leaves can also be detached cleanly and without perforation. The binder will appreciate the features of the process which enables 10,000 sheets or more to be prepared in bulk with a special wax-like preparation which is not only clean in use but practically invisible and for which there is no need to wait for it to dry before proceeding with the rest of the operations. This patented waxing process enables sets to be separated or " parted-off " in bulk.

Complete Multiplex outfits consisting of a 15 in. clamping press, a supply of special separating preparation and flexible adhesive, together with a set of brushes and full instructions cost only £27 10s. and the efficiency of the process is proved by the millions of stationery sets now being made by this method throughout the country. Readers interested are invited to write for full details to:— The Multiplex Company, 5, Sandringham Road, Lytham St. Annes, Lancs.

NEW CONVERTER FACTORY FOR THE NORTH

" Paper and Print " photograph of the specially built factory recently opened by R. J. and E. Bradbury (late North Staffordshire Pasteboard Co.) at Congleton, Cheshire. Ideally situated and only a short distance from the Manchester to London road, the factory represents a record for these days of shortages by being completed and in production within ten months of the laying of the foundations.

HIGH SPEED PAPER BAG PRODUCTION

To-day's high speeds in the production of paper bags is a special triumph for the engineering section of the paper bag trade in which the well-known firm of Cobden Chadwick, Ltd., Century Works, Oldham, can lay claim to quite a big share.

Though this firm is reluctant to quote actual output figures for their latest high-speed paper bag machine, users report prodigious production records using every type of paper bag stock and without the slightest sacrifice of quality. One of the primary factors which have made high speeds possible has undoubtedly been the consistent use by the firm of ball-bearings of high quality, and which are introduced into even the smallest bearings of this interesting and fast-running model. Not only has this resulted in the reduction of friction to the minimum but it has also meant a considerable saving in the power required to drive the machines. Increased speeds naturally call for greater safety measures and it is interesting to note the additional safeguards introduced in the design of this model and which have been arranged to blend admirably with the general streamlined effect.

The " Chadwick " Carrier Bag Making Machine is another of the firm's productions which is rendering the paper bag trade exceptional service at the present time and thus helping to meet the increased demands for the popular and inexpensive paper carrier bag. The labour-saving and space-saving features of this machine, which produces bags complete from the reel and all ready for stringing, makes a particular appeal to bag manufacturers at home and abroad, and it is unfortunate that the supply situation and labour shortage have combined to restrict output.

The reputation built up by the firm for paper sack making machinery has likewise resulted in enquiries for this special type of machinery from all parts of the world, and though fully occupied on these and other orders for their various specialities the firm continues to follow up new developments in paper bag manufacture and is at the moment engaged on interesting experiments in connection with transparent cellulose bag machinery.

It has long been an axiom in paper bag circles that anything new in machinery required by the trade can be heard about from Century Works and now that Cobden Chadwick, Ltd., have been completely re-converted from the war-time role of munition works it is once again devoting its entire resources to the production of paper bag machinery. The raw materials situation has naturally necessitated concentration upon the reconditioning of machinery, but the firm looks forward to the time when materials are more plentiful and when they can supply their latest machines to all the large number of new and old customers awaiting same.

SPECIALITY COATING

The Park Royal Mill of Albert E. Mallandain, Ltd., is gradually building up its output of speciality coated boards and papers to pre-war level, notwithstanding the continued restrictions in the supply of raw materials.

With the object of producing the maximum quantity of converted paper per ton of coal and reducing the consumption of coal to the minimum, the steam raising and power plant is being thoroughly overhauled and many projects are under way aimed at increasing its all-round efficiency. A very comprehensive programme of reconstruction and maintenance is being undertaken and everything possible being done to keep the production and auxiliary units abreast of modern ideas and methods. New raw materials, colours, adhesives, etc., are being constantly examined and tested by the firm's technical staff and the mill's undoubted reputation for quality and service is being zealously maintained.

The demand for all the mill's established products continues to far exceed the supply, but in spite of this an " all out " effort is being made to contribute to the export " drive."

The majority of this mill's products are made from home-produced materials, which occupy many man-hours for their conversion into speciality paper and boards of high sales value, yielding a very satisfactory return in the export markets.

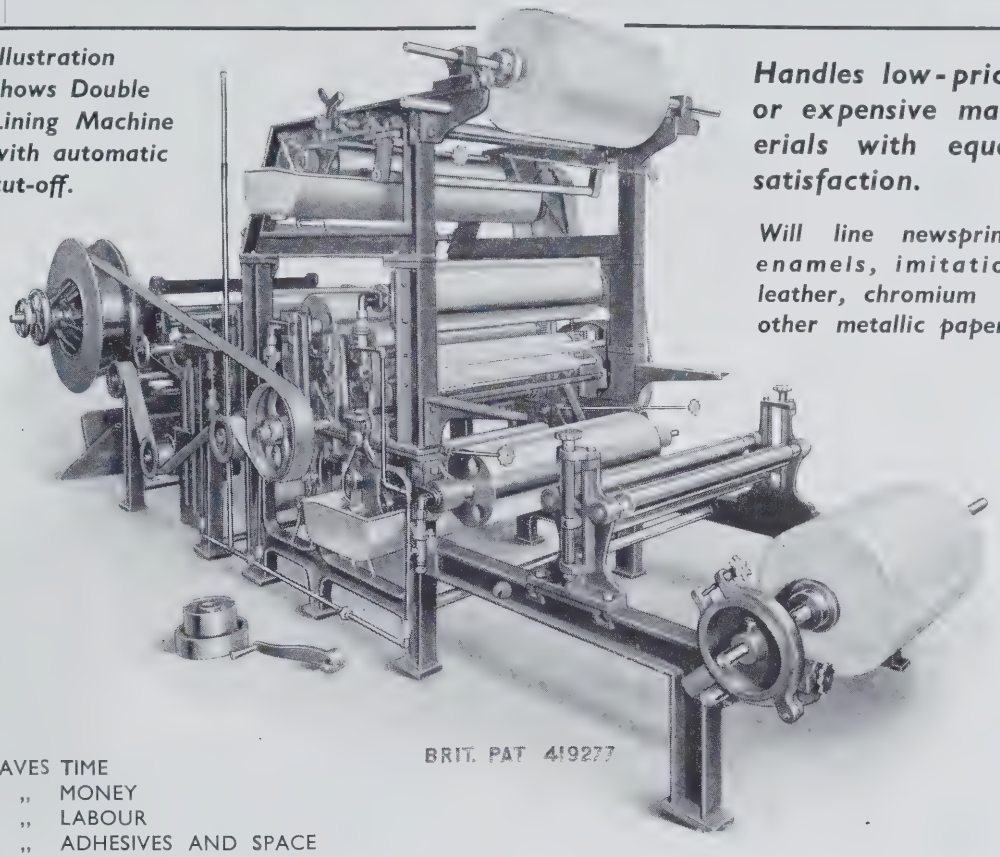
These boards and papers enter into many important branches of industry, both at home and abroad, as well as Government Departments. To name but a few, these include banks, insurance offices, schools, factories, and the law, while exports go to South America, South Africa, New Zealand, Australia and Canada.

The directors are fully alive to the beneficial effects on the output and efficiency of the workers of social facilities and amenities, and these will be developed still further as conditions permit.

Rowbotham's New Patent

DOUBLE LINING *and* COMBINING MACHINE

Illustration shows Double Lining Machine with automatic cut-off.



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PAPER BLINDS and TABLECLOTHS

When the nation was crying out for blinds for the "blackout" not even the shadow factories were busier than the Crown Works of Edward Gee and Sons, Ltd., of Longwood, near Huddersfield, makers of at least half-a-dozen of the best-known paper blinds in the country, including the "Toff" blind, which is acknowledged to be the toughest and strongest paper blind in existence.

There is still a great demand for these specialities, even in these days of no "blackout," but like most other commodities requiring paper the demand has to remain unsatiated because of the very small allocation of material allowed for this conversion.

The same story applies to other popular paper lines produced by this fifty-year-old firm of converters, which include paper tablecloths, shelf papers, grocery bags, etc., all of which the firm produced in huge quantities in pre-War days. Mr. A. Gee, director of the company, is confident, however, that paper will one day be given its rightful place among the nation's essential products and that the paper-making industry will duly receive bigger allocations of fuel and raw materials and thus result in more plentiful supplies. In preparation for this happy time, the firm is devising several new and interesting lines for the household and factory and sees many possibilities for the new wet-strength papers for lines in which they specialise.

KRAFTCORD LIMITED

Citizens of Stockport are still for the most part blissfully unaware that it was a local man who "came to the rescue" of Royal Ordnance during a critical period of the war by producing paper for bullet tips when the scarcity of aluminium was so acute that housewives were urged to give up "Saucepans for Spitfires."

The idea of using paper in place of aluminium for bullet tips had in fact been tried out in the same town towards the end of the 1914-18 War, but hostilities happily came to an end and the project was shelved and all but forgotten.

When, in 1941, the War Office sent out an S.O.S. for aluminium or substitute materials, three

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Stockport men, comprising a carpet factor, an expert on paper and a business administrator, got together with the object of furthering the idea orginally conceived by one of their townsmen.

Thus it was that Kraftcord Limited, specialists in spun papers, came into being. Starting from scratch, the firm designed special machinery for spinning strips of kraft paper into bullet rod of a hardness fully equal to the aluminium which it had to replace. Their combined efforts proved so successful that, in quite a short time after its inception, the firm opened a factory at Rochdale, which (later transferred to Stockport) was kept running night and day; and this factory produced sufficient paper bullet rod to convert to more than 750,000,000 bullet tips before the end of the War made further production unnecessary.

Its war-time role fulfilled, Kraftcord Limited immediately devoted its attention to products for more peaceful purposes, and machines, which only a few weeks earlier had been producing bullet rod, were soon turned over to the production of paper piping cord for cars and aircraft as well as spun paper for carpets and furniture.

Like most firms in the paper trade the uses to which "Kraftcord" products can be put to-day are determined, not by the demand for those products, but by the extent to which the necessary paper can be granted. The firm has, however, perfected the process of spinning paper to such a fine art that many additional uses for their attractive, economical, colourful and hard-wearing spun papers is certain to follow as a natural consequence the moment that the supply position enables paper to be used for such purposes.

Among the possible uses which the firm has in "mind's eye"—because the paper shortage does not at present permit translation into fact—are as uppers for beach and holiday shoes, also for ladies' millinery, or as woven materials for the woven fibre type of furniture, and even for fire-screens, samplers, binder twine and carpets, as well as for many other useful articles for which cotton and other yarns are customarily used.

The experience derived in working to precise specifications—with an exacting variation limit of no more than 2/1,000th inch—has been of immense benefit to Kraftcord Limited, and it is a credit to the skill, resourcefulness and craftsmanship of their executors that every item of machinery in use at the firm's factory has been designed to their own specification, including a spinning machine operating at a speed of 3,000 r.p.m., which is comparable with the fastest spinning machinery in the textile industry.

As soon as the supply position becomes more normal, this firm will play its part in peace just as it did in War.

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Paper and Print FINANCE

being a brief review of the first seven months of the year

£ £ £ £ £ £ £ £ £ £ £ £

BY M. DUFFY

SHARES of public companies operating in the paper and print industry fully participated in the generally active conditions which prevailed on the London Stock Exchange for most of the present year, with rises recorded and held in a majority of instances. Amongst lower-priced shares, features in this respect were supplied by the 4s. Ordinary class of the OLDHAM PAPER STAINING COMPANY, which rose from 7s. 9d. in January to 11s. in July, after having changed hands slightly above this figure. The capital of this company consists of £50,000 in 10s. 6 per cent. Cumulative Preference shares, plus £80,000 in 4s. Ordinary shares, with no Debentures or other loan charges outstanding at the moment, but dealing conditions were usually of a rather restricted nature.

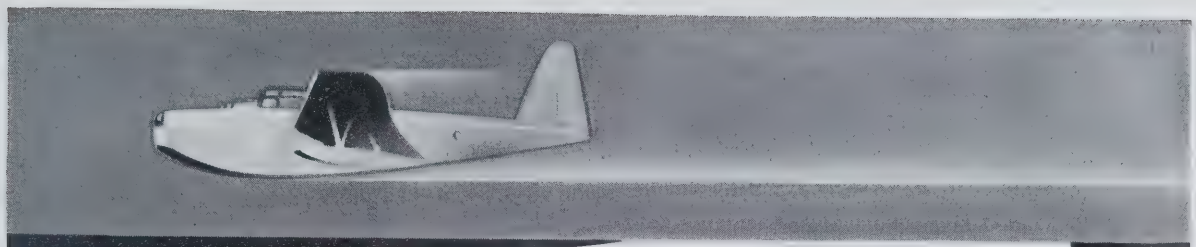
BRITISH CELYLIND 1s. Ordinary also doubled in value by reaching 5s. in July of the present year, and here, too, dealings were not always free. In contrast, the highly marketable INVERESK PAPER 1s. Ordinary, which opened the year about the 4s. mark, gradually receded, with one rally, to a new level of around 2s. 9d. Elsewhere, FREEDER CREPE PAPER MILLS 5s. Ordinary declined from around 10s. 6d. to 8s. 6d., after having at one time been transferred down to 8s.; FISHERS FOILS 5s. Ordinary declined from about 12s. to 10s., to subsequently recover to 11s. 9d.; whilst ASSOCIATED PAPER MILLS 5s. Ordinary receded from 19s. 3d. to 17s. 6d., but later recovered to 18s. ALBERT E. MALLANDAIN 2s. Ordinary opened the year about 11s., improved at one time to 13s., but later relapsed to the region of 9s. 6d.

Amongst medium-priced shares, the feature was undoubtedly supplied by the 5s. Ordinary units of AULT AND WIBORG which, after their sub-division from £1 denomination, became one of the most active counters of their section. After opening the year at 29s. 6d., they steadily appreciated until they reached a high level of 53s., subsequently declining to 49s. 3d. The issued capital of this company consists of £138,539 in £1 5½ per cent. Cumulative Redeemable Preference shares, plus £217,667 in 5s. Ordinary shares and stock units. The shares are always freely marketable, and also enjoy a quotation on the Birmingham Stock Exchange.

Features as regards capital appreciation were also provided in the medium-priced class by £1 Ordinary class of MANSELL, HUNT AND CATTY which, after remaining in the neighbourhood of 21s. during the first four months of the year, had reached a further high level of 28s. 9d. by July. In contrast, the 1s. Deferred class of KOLOK MANUFACTURING remained around 26s. for most of the year, but fell to the low figure of 22s. 6d. in July. Relatively steady conditions were displayed by WAXED PAPERS 5s. Ordinary and by GUARD BRIDGE PAPER £1 Ordinary, the former having receded by only about one shilling to their July level of 20s. 6d., whilst the latter were recently valued about 48s. 3d. against a highest this year of 49s. 6d. For these latter, however, restricted dealing conditions have always been evident, and they are exclusively marketed on the Edinburgh Stock Exchange.

ALLIANCE BOX 5s. Ordinary were noteworthy in that they opened the year, an averagely marketable security, around 33s. 9d., reacted during February to 32s. 6d. after touching 35s. 3d., their quoted high level, fell as low as 30s. 6d. in May, and during July were transferred at one time as low as 26s. 9d., subsequently easing further. They were later quoted in the neighbourhood of 28s. 6d. and also enjoy quotations on both the Birmingham and Liverpool Stock Exchanges.

LLOYDS PACKING WAREHOUSES £1 units began the year in the region of 34s. 6d., improved to their highest level of 35s. 9d. in March, and reacted to their low level of 32s. 3d. in May. They were later valued around 34s. BRITISH COATED BOARD 5s. Ordinary, one of the most marketable issues in their section, opened the year at 26s. 6d., but by April had established their low level of 22s. 6d. By June, however, they reached a high level of 28s. 9d., but since that time have been gradually receding.



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Amongst higher-priced shares, movements in favour of holders were also in the majority. One of the noteworthy features in this respect was supplied by the 5s. Ordinary class of EBURITE CORRUGATED CONTAINERS, which were a steadily appreciating market during most of the year. From a price of 55s. in January, they have established the new high level of 65s. 6d., with dealing conditions usually free. The issued capital of this company consists of £80,000 in 10s. 5 per cent. Cumulative Participating Preference shares, plus £104,250 in 5s. Ordinary shares, with no Debenture or other loan charges outstanding at the moment.

Strength, but a lesser degree of marketability, was also displayed by RAPHAEL TUCK £1 Ordinary, which varied from a shade over 59s. to a trifle above 49s. during the first three months of the year, to establish their later high level of 63s. 9d. in April. Since that time they reacted to the neighbourhood of 60s. Similar reports were afforded the £1 Deferred Ordinary class of WALLPAPER MANUFACTURERS, which varied between 48s. 3d. and 58s. 6d. in the first quarter of the year, to establish their highest level of 60s. in the following June, their later valuation being 54s. It might be noted that dealings in RAPHAEL TUCK were sometimes only possible on the basis of a wide difference between buying and selling prices, whilst business in WALLPAPER MANUFACTURERS Deferred was normally more easily possible.

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JOHN DICKINSON £1 Ordinary also recorded steady capital appreciation after an initial reaction. Opening the year at £5¾, they shortly afterwards were quoted at the low level of £5, but after that time registered steady improvement to another high level and subsequent quotation of £6⅛, with dealing conditions as free as for any security standing at such high a premium. Similar behaviour was displayed by the £1 Ordinary class of CLYDE PAPER MILLS, which remained around 66s. for the first three months of the year, to improve to 71s., their existing high level, during the second three months. These latter, however, are exclusively marketed on the Glasgow Stock Exchange and the amount of business passing has never been sufficient to test or establish quotations properly.

Restricted dealing conditions have also always prevailed for the £1 Ordinary class of CROPPER AND CO., which opened the year valued at 62s. 6d., outright business being confined to selling orders in the absence of any floating supply of shares. They were at one time marked down to 58s. 9d., but subsequently improved to their highest level of 80s., to later react to 65s., at which level they were still standing. Similar reports were made concerning COLTHROP BOARD AND PAPER £1 Ordinary, which began at 62s. 6d., receded to 58s. 9d., later changed hands as high as 72s. 6d., and were then again priced around 62s. 6d.

ALBERT E. REED £1 Ordinary began the year at 55s. 6d., and by the end of the first quarter of the year had fallen to 48s. 3d. A recovery to 52s. 6d. took place towards the end of the second quarter, but this was not held, the price subsequently receding to 47s. 6d., then the lowest for the year. WIGGINS TEAPE £1 Ordinary broadly followed the same trend by opening the year at 80s., falling to 71s. 3d. at the end of the first quarter, and recovering to 73s. 9d. in July. Average-sized orders were normally possible of outright execution in both these two last mentioned.

The 5s. Ordinary units of THOS. DE LA RUE were one of the most marketable securities on the floor of the Exchange, this characteristic becoming more pronounced after their subdivision from £1 to 5s. denominations, when they quickly improved from 68s. 9d. to 77s. 6d., i.e., their highest yet level. From this figure they fell to their low level for the half-year of 55s. 6d., but subsequently recovered to around 61s. 3d.

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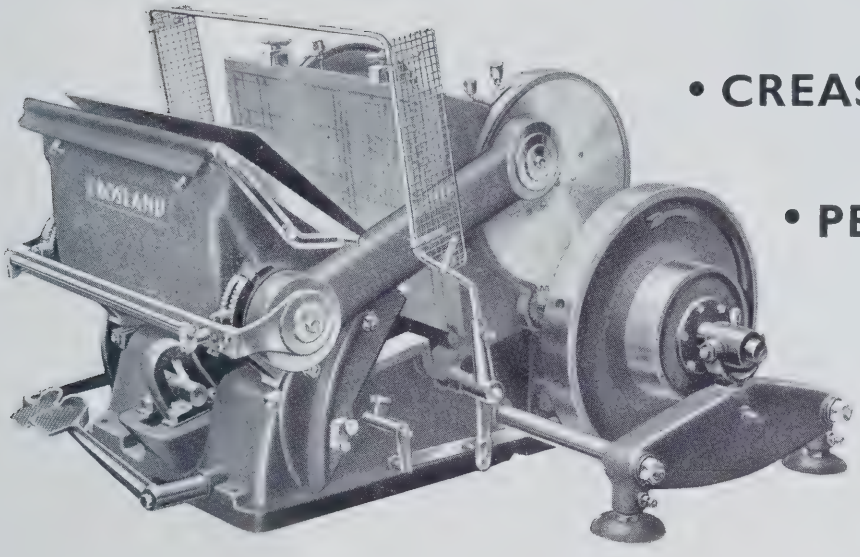

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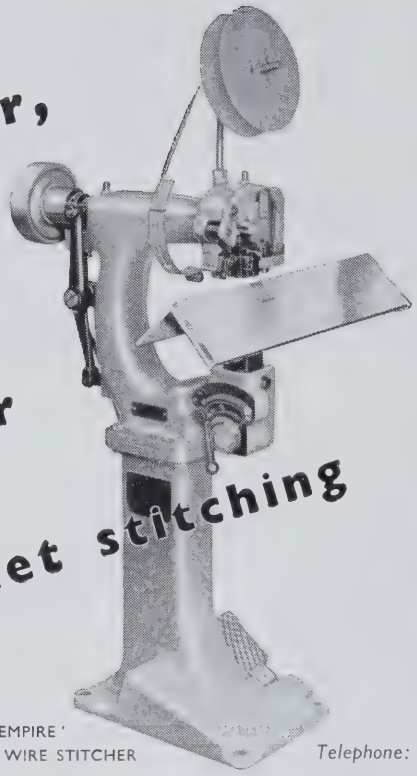

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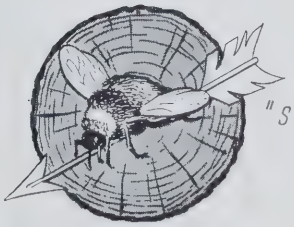

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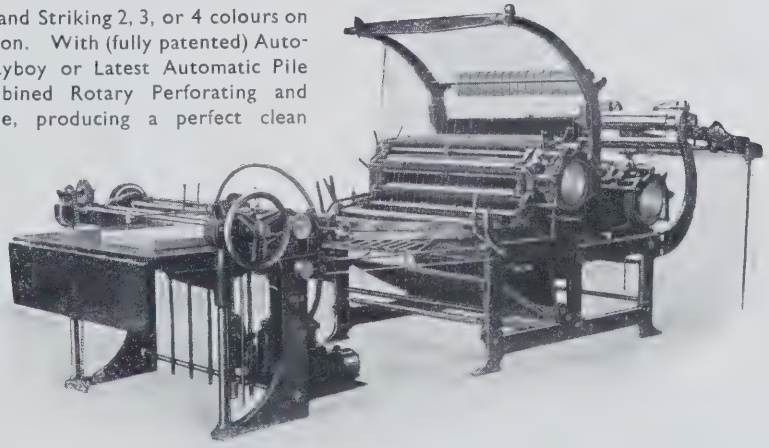

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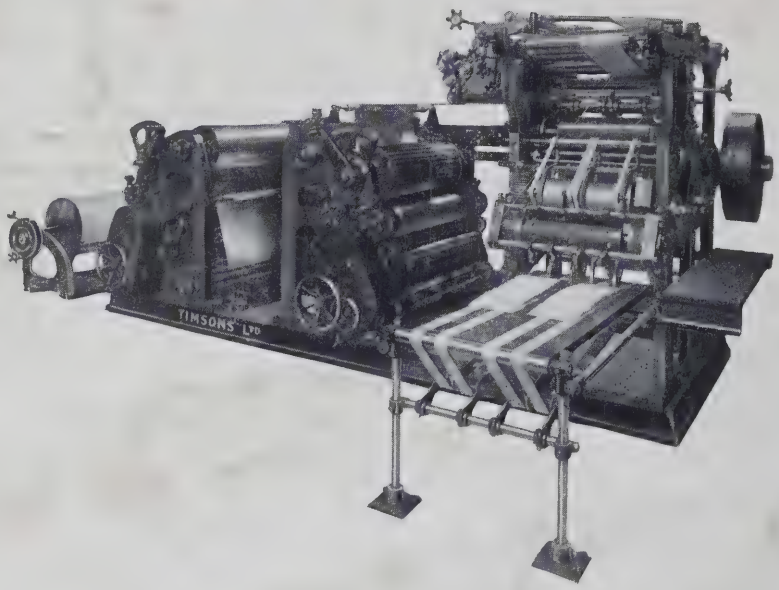

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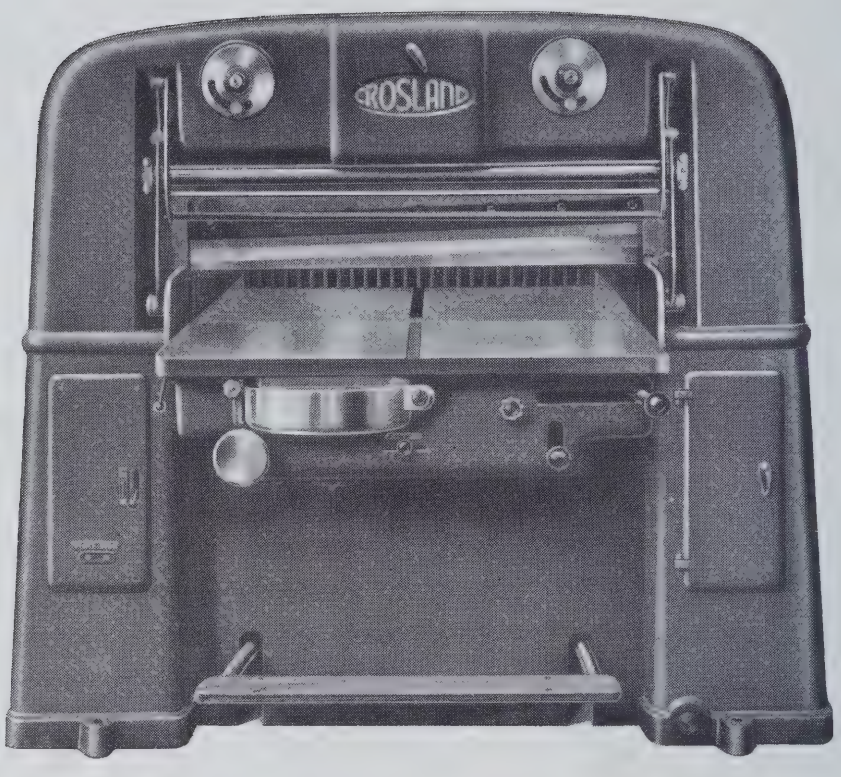

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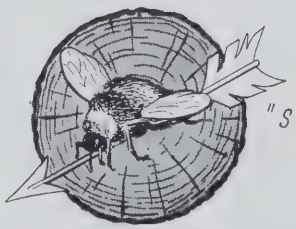

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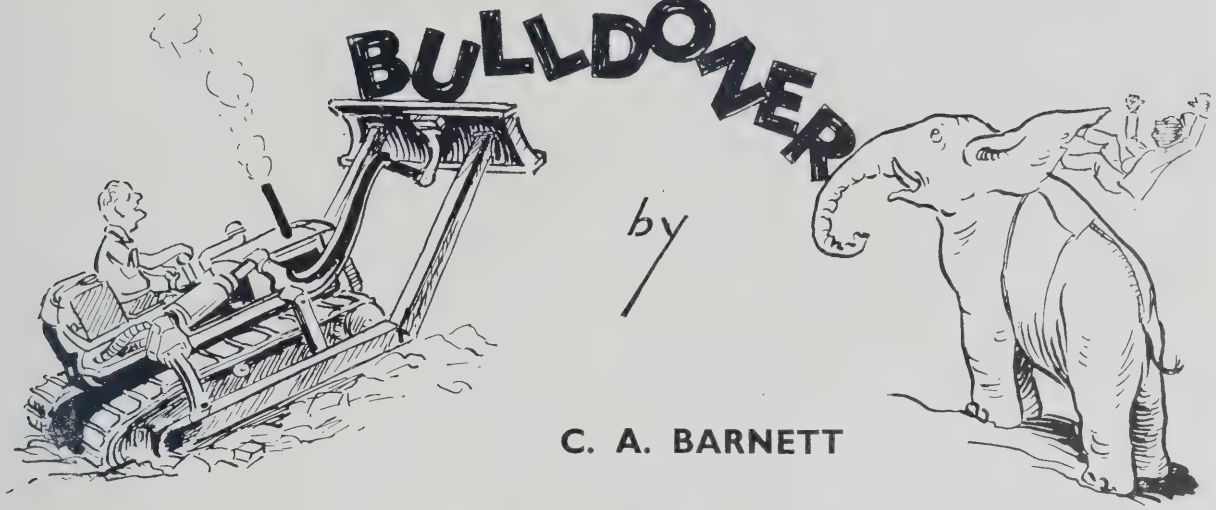
ELEPHANT v BULLDOZER



by

C. A. BARNETT

HAVING spent more years than I care to recount in the Western Highlands, I was extremely pleased to be posted back to "Print" and to be stationed in the very delightful island of Ceylon.

We were a company of ex-civilian printers and binders, and with the assistance of a very well trained Indian Sapper Company were responsible for much of the letterpress printing for the Allied Forces. Unfortunately our equipment was not extensive and the machines were constantly working to their utmost capacity. The temporary loss of two platens en route from India added to our troubles until we were able to install and operate two other machines which had been sent from the Middle East. One was a platen in good condition, the other a stop cylinder press of Italian origin which reached us via Italy, Addis Ababa and Cairo. This machine eventually gave sterling service; given good luck, and supported by rope and wire, it would run at 300 i.p.h.

The main answer to our problem was a high speed flat bed. A machine of this type had been promised but owing to the acute shortage of shipping space the press didn't seem as though it would materialise. Dame Fortune, however, took pity on our struggling stop cylinder. About 10 a.m. one bright morning I was informed that a ten ton flat was outside the press carrying printing machinery. Inspection revealed a new two-revolution press complete with automatic feeder. Apparently it was ours for the asking, or, as the voice of higher authority put it, "it was ours for the taking from the lorry." He regretted there was no crane of the required size available in the district.

We called a council of war and viewed the position; assets included a couple of rather pliable crowbars, the local elephant, a bulldozer (if not engaged in other work), a crumbling bank nearly the height of the lorry bed, tons of enthusiasm and an ever growing desire for the machine. To offset this we discovered that the bolts on the steel bands round the crate were jammed in the runners on the lorry bed, and that the crate was showing signs of wear and tear.

The crowbars proved their pliability in less than five minutes, so the next step was the use of the elephant. Personally I had had no experience of the capabilities of this animal, but was assured by the veterans in the Company that everything would be all right. Plan of action was to back the lorry as near to the bank as possible and bridge the gap with a couple of sleepers, (these closely resembled the English railway type). The elephant would push the crate clear of the runners and on to the back of the lorry. The mahout took his orders, inspected the crate in a very professional manner and in turn invited his charge to do the same thing. The elephant expertly passed his trunk over the crate, made a non-commital sound, and amid growing excitement (our ranks had been considerably swelled by a band of sweepers) applied pressure with his head to the corner of the crate. There were a few sharp cracks and the crate took a list to port; the elephant stood back to take stock and (if it is possible to note discontentment on an elephant's face) looked a trifle hurt that his efforts

were of no avail. His trunk again explored the crate and with another wheezy sound he gave it all he had—the crate moved all right but the lorry went with it—the near-side wheels left the ground and for a moment it looked as though the whole would turn over. During that split second it flashed across my mind that the machine was irreplacable, and it would prove extremely difficult, to say the very least, to explain away an accident. I could almost see an endless succession of debit pay chits. The cheers of the sweepers must have been music to the elephant's ears, but fortunately the mahout noticed the look on my face and restrained the animal. Never has parting with a pourboire given me so much pleasure as the Rs 5 I gave the mahout to take his animal to play elsewhere—I felt it would have been cheap at Rs 50!

The only alternative was to use the bulldozer, which was now available and had among its kit enough wire rope and chains to tow the crate. Having positioned the rope we supported the crate with branches of trees and, warning the driver of the value of the crate's contents, we left the matter in his hands and stood our distance in case the rope failed to take the strain. The first minutes gave the impression of boxers sparring for position as the bulldozer gently pulled this way and that; luck was again with us for as he jockeyed for position a loud grating noise was heard and the crate freed itself from the runners. The bulldozer gently eased its burden to the end of the bed, and with branches and "elbow grease" the crate was levered on to the sleepers. Even the sweepers realised this was a delicate operation and silence fell as the crate moved slowly over the gap to the edge of the bank. With a creak and a groan it dropped safely on the firm earth and for the first time for over an hour I was able to breathe freely. The spectators formed a double line and the bulldozer towed its charge through their chattering ranks to the press door, where tactics had to be changed and the blade used to lift the crate clear of the step, then finally it went triumphantly into the press.

This story ends as all good stories should—the machine had suffered no ill effects from its handling—in fact we re-crated it later and sent it further East—this time it was loaded on a tank transporter with the bulldozer and a breakdown winch, but that's another another tale.

It can be added, however, that as far as I know it's still running.

BOOKS RECEIVED

Processes of Graphic Reproduction in Printing

This second edition of Harold Curwen's excellent work will be welcomed by all engaged in making designs for reproduction. To many accomplished artists as well as to the student, the book is a most valuable guide to the many processes used in the graphic industry.

Cloth bound, the book contains 144 pages profusely illustrated, in many cases by the processes described. It is divided into three parts: (1) Autographic Methods, (2) Photographic Reproduction and (3) Bookbinding, each subdivided into sections

Published by Faber & Faber, at 16s. net, this very excellently produced book is unhesitatingly recommended.

Ilford Formulae

The great number of users of Ilford photograph materials will find this revised edition of their Formulae and Data Textbook of inestimable value.

The 48 pages are excellently planned, giving many and varied formulae.

Space forbids detailing the contents but besides negative and paper developers the book contains formulae and data for all fixers, hardeners, reducers intensifiers, print toners and includes dark-room accessories. Also a useful list of Ilford packed chemicals is given and finally a two page alphabetical index.

The textbook is nicely produced with an attractive varnished cover and is priced at one shilling.

The Church of St. Bride's was built to replace the original destroyed in the Great Fire of London, 1666 and is considered by many to be Wren's finest parish church. The main building was once again destroyed by fire, as also were our offices, on the night of December 29-30, 1940 during the air-raid on London.

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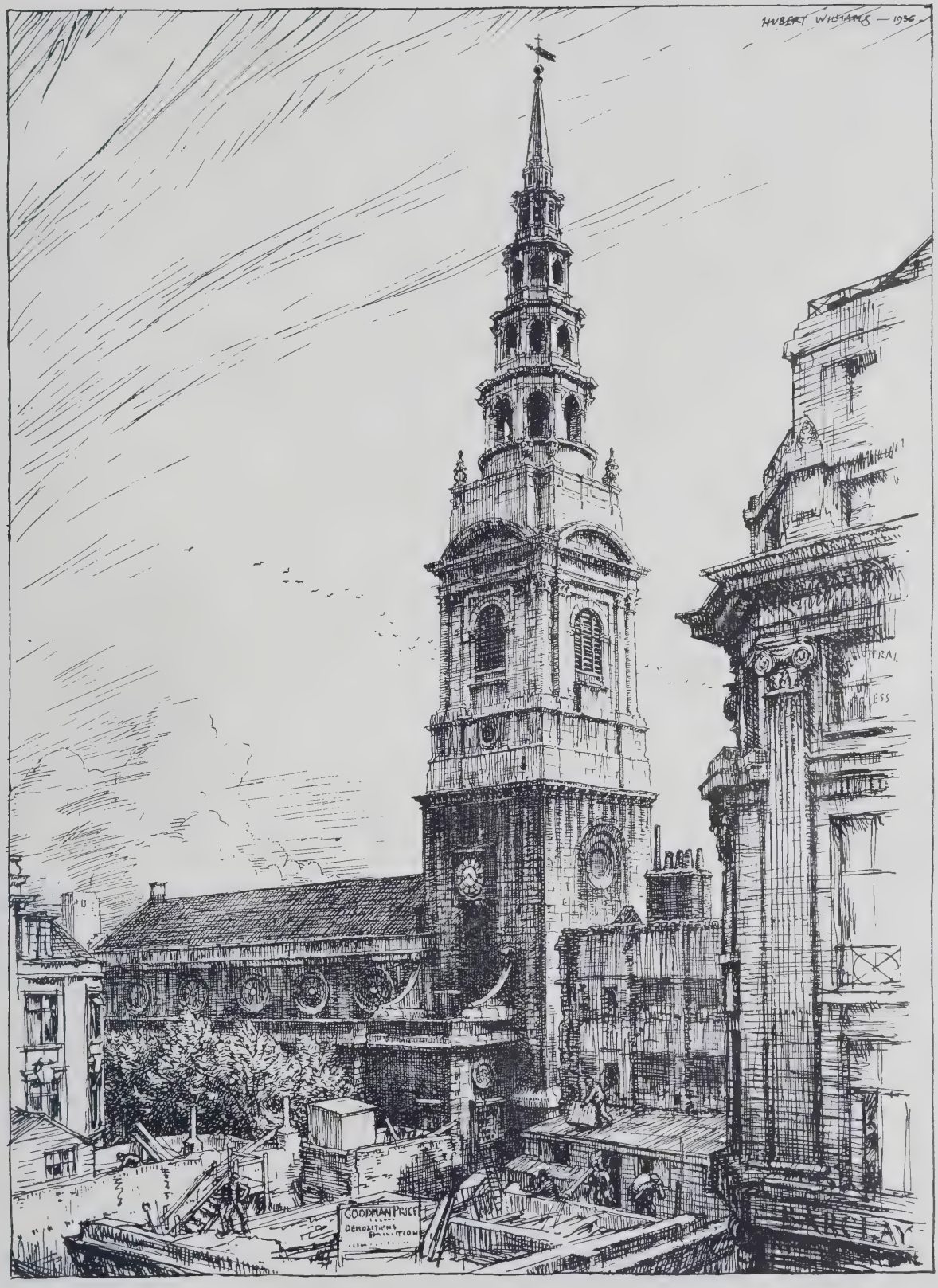

ST. BRIDE'S PARISH CHURCH, Fleet Street.

METICULOUS MATTERS

● Devotion to Detail is the one test by which all talent can be judged. It was the mark of the Old Masters ; it is still the essence of Craftsmanship. Without it no standard of work can be achieved or maintained, for where there is no interest, there can be no incentive. Devotion to Detail distinguishes the professional from the amateur ; it is that indefinable quality possessed only by those who *love* their work.

● Widespread indifference to detail is, alas, one of the worst features of this post-war period. It is becoming very noticeable in Printing and the Graphic Arts, particularly in typesetting. Here I observe a growing tendency to disregard the finer points of typography when converting a layout into type. It may be said that faulty typesetting can be put right. So it can—after expensive alterations have been made, involving waste of time and effort.

● Now, it is my firm conviction that the test of efficient typesetting should be determined by first proofs, not final revises. I am not concerned so much with the degree of resemblance between the proof and the original layout ; I am considering here the faults which occur in the actual setting—the careless spacing, wrong alignment of initials, battered letters, and the indifferent positioning of blocks. These are details which can make or mar the appearance of any piece of printed matter.

● The spacing between words, the spacing between lines, letter-spacing, and the spacing between blocks and groups of type —these are a few of the finer points of typography which are so often overlooked or ignored. The result is inevitable, for such indifference to detail means careless treatment, unnecessary corrections and increased cost which is, in many cases, out of all proportion to the original estimate for typesetting expenditure. In these days of paper shortage, constant revision of proofs also constitutes serious wastage of a vital commodity.

● Master-printers and composing-room overseers have an added responsibility in this direction. By a closer understanding of essential details when work is put in

hand, they can bring about that co-operative effort without which nothing worth while is ever achieved. And by encouragement and constructive criticism they can do much to revive the spirit of craftsmanship among compositors. For the matters I have mentioned are not merely important—they are vital to any firm wishing to create and maintain a reputation for expressive and profitable printing.

● Typography is an exacting subject, calling for meticulous care and constant vigilance both in theory and practice. The technical schools are doing invaluable work in the training of apprentices and journeymen, but the knowledge thus gained should find its fullest expression in the average day's work. The present phase of indifference can only be cured by a change of attitude reflected in the individual ambition to maintain Pride of Craft and Devotion to Detail. In this way will come that practical efficiency in typesetting of which there is great need at the present time.

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PRINTING SPECIMENS

REVIEWED

CERAMICS in ART and INDUSTRY

HERE is the perfect answer to those who have at some time or other made the assertion that British colour printing is "not as good as some we've seen." "Is it then the block quality or the actual printing?" has been the query. Well, here is a PERFECT piece of letterpress printing, a special export issue of Messrs. Doulton's latest "Ceramics in Art and Industry." Designed chiefly for the interest of overseas markets in U.S.A. and the Commonwealth, Doulton's hope that the few copies available in this country will be accepted as a token of "things to come," so if the opportunity occurs to see a copy, look well at it and join me in congratulating the sponsors on the production of a worthy ambassador for fine British Pottery *and* fine British printing.

Following the usual format of previous issues, 8½ in. by 11 in., printed letterpress and Plastoic bound in pale emerald, the cover has a grey ground with dark crimson lettering and is varnished. The thirty-six pages of white art use a raw sienna as a second colour.

The brochure is again edited by Desmond Eyles, admirably designed and produced by D. J. Keymer & Co., Ltd., and superbly printed by L. Bell & Co., Ltd., Leicester and London.

Typical of the excellent layout are the two pages we reproduce. The left-hand is one of 12 pages using four colour process blocks for the illustrations. These are all of admirable quality, the delicate tones of some of the beautiful Doulton china and the rich colours of some of the figures are a real joy to see. Register of colours is everywhere flawless.

The chapter "How a Royal Doulton Figure is Made" I found most interesting. The twelve half-tone illustrations to this are well chosen and well photographed to show the various processes and stages of casting, the delicate hand-work and colouring most effectively and clearly. Altogether, a very fine job, indeed, which will undoubtedly do good wherever it goes.

BY A. WADE BOTTOMLEY

FROM AMERICA

OFFSET LITHO

WHY OFFSET LITHOGRAPHY IS ON THE MARCH

From the well-known Harris-Seybold Company of America, comes this striking brochure "Why Offset Lithography is on the March."

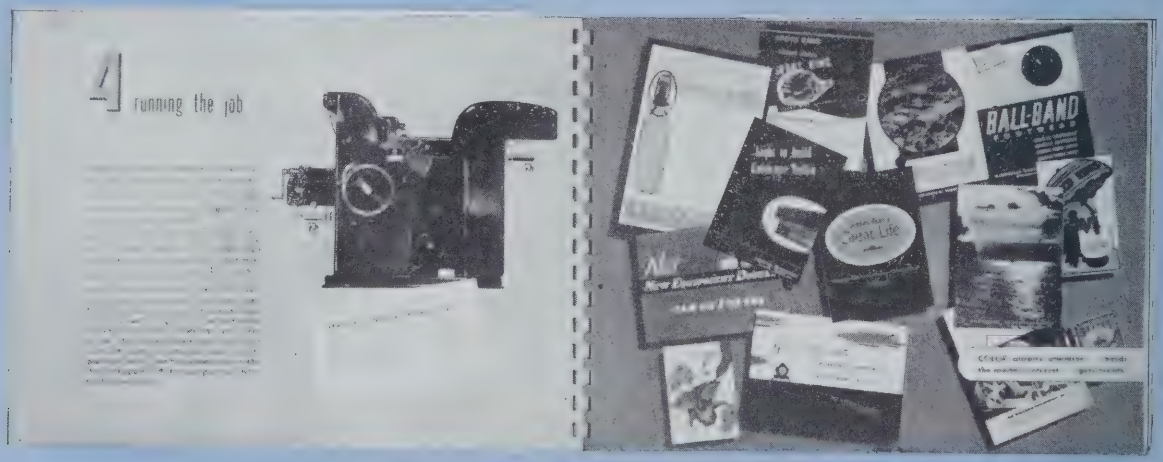
It is excellently produced and in general appearance, both inside and out, could not be mistaken for anything but American. With its quite typical vigour in both layout and use of colour, I find it very refreshing and have noted the use of a variety of paper finishes, matt-surface cover board, grained surface and coated offset papers.

The brochure is 11 in. by $8\frac{3}{8}$ in. and is, of course, printed offset litho by The Crane-Howard Lithographic Company in the U.S.A. The cover illustration in four colours is reproduced from a water colour by Frank N. Wilcox. Vigorous in treatment, it has a pleasant neutral grey tone ground behind the staggered panel which is in perfect harmony with the illustration.

The pages reproduced give an idea of just two of the variety of page layouts used. The left-hand page is one that is printed on coated paper and has a blue vignetted ground, the solid used only in the figure 4 of the headline, whilst the right-hand page gives a series of specimen covers, etc., in colour on a biscuit-coloured ground.

Text is very nicely arranged with most attractively displayed headlines and contains very interesting pictorial graphs showing how the ratio of lithography to letterpress printing rose in U.S.A. from 11.13 per cent. in the 1920s to 25.2 per cent. in 1939. It is anticipated that a figure considerably in excess of this will be attained in the post-war years.

A very good case is made for offset lithography, and this brochure can leave no doubt in anybody's mind of the excellence of this medium. Its flexibility is very ably demonstrated in the 22 pages, for it is seen that the buyer of offset is not restricted in his selection of either paper or choice of art mediums, and to quote a line or two in the preface—"He can make use of a greater number of colours or use colour more dramatically, without an undue burden on his budget."



WELL DONE AUSTRALIA

QANTAS EMPIRE AIRWAYS REPORT FOR 1946

This brochure, produced by Estate of Harry G. Nall, Print., Sydney, Australia, has many very interesting features and gives, in word and picture, an account of twelve months in the life of Qantas Empire Airways.

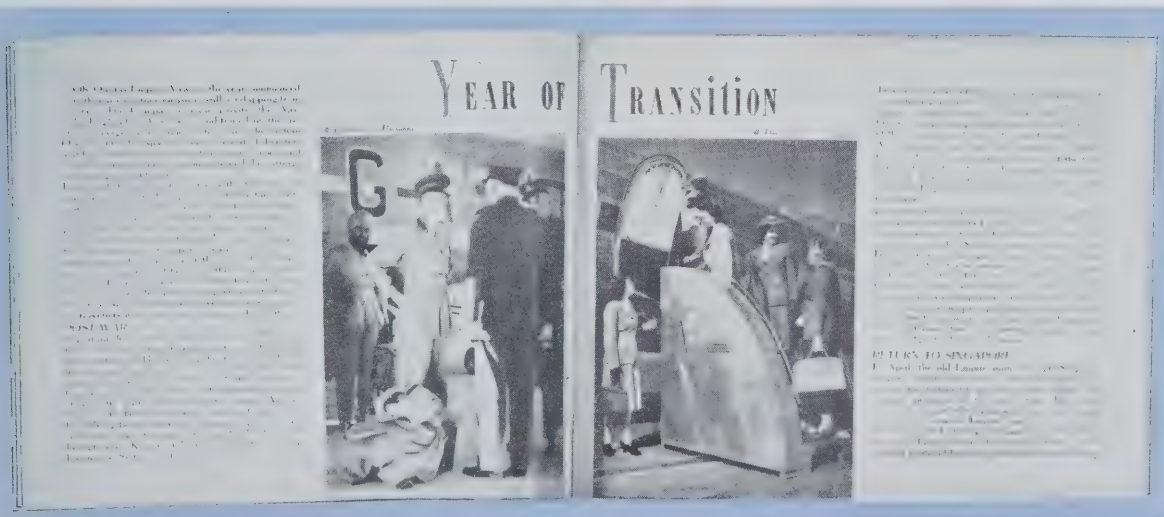
The cover design is very attractive in four colour process, and the idea has been well handled with a feeling of spaciousness around the flying boat, and the delicate colours of the globe are enhanced by the black area at the top. The title is in white except for the word "Report" in red, but the bit of line decoration in the border is, to my mind, not in keeping with the design.

Printed letterpress, the brochure is $10\frac{1}{2}$ in. by $8\frac{1}{2}$ in. and the back cover carries another full colour process block of an aerial view of Sydney Bridge with "Qantas Empire Airways" in staggered caps and the company's symbol at the bottom right in red and blue. The insides of both covers depict full page bled-off aerial views. These, like the illustrations throughout the 16 pages, are duplex half-tones using a bright blue as the second colour. These are particularly effective and excellently placed on the pages with copy running to two columns per page.

An intriguing piece of work is on the title page where ten lines of copy appear at first glance to be set in 18 pt. Ultra Bodoni. A second glance, however, compells one to examine this lettering, for the lines seem to converge and what is more, after the first line it also appears to gradually change to italic. So, of course, it *is* drawn and well drawn, but I wonder, after all, is the effort worth it?

A large route map in line occupies the centre pages with copy down one side and the title down the other. The title is printed with alternate letters in blue and black, and here I think the title too long for this treatment. It is better on the last page and looks very effective in the single-line heading "Looking Forward." Orange is used very sparingly for occasional sub-heads and a rule or two.

This is an interesting as well as a very accomplished piece of work.

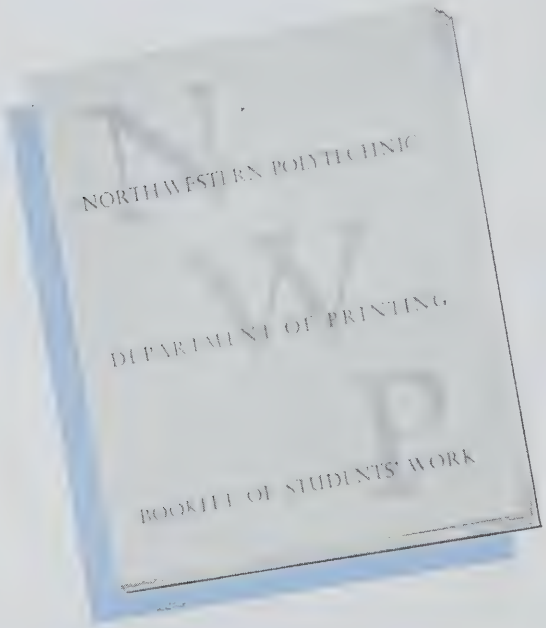


N.W.P. STUDENTS'WORK

Containing examples of work done by students attending the hand composing, letterpress machine, Linotype, Intertype and Monotype classes during the 1946-7 session, this book is a serious attempt to renew the Students' Year Book tradition.

The cover is printed in two colours on cream stock, the large initials being in pale magenta and the 56 quarto pages carry some really good examples, all excellently printed.

The problem of paper supplies was solved by printing each section on a different kind of stock and this has also had its advantages for the student in that he has been able to confine his subject to the most suitable paper.



The section of hand-set Display Composition is of especial interest with some really first rate examples. Amongst these, one or two memo headings are particularly good.

Colour and Monochrome work in the Half-tone section is of a high standard and the three examples of Intertype, Linotype and Monotype composition very well done indeed.

This booklet will serve at least to show employers the type of work that is being turned out at the school, and encourage them to send their apprentices whenever possible to the day classes which are free to all such under 21 years of age.

Employers are also reminded that they are cordially invited to visit the school to see the students at work.

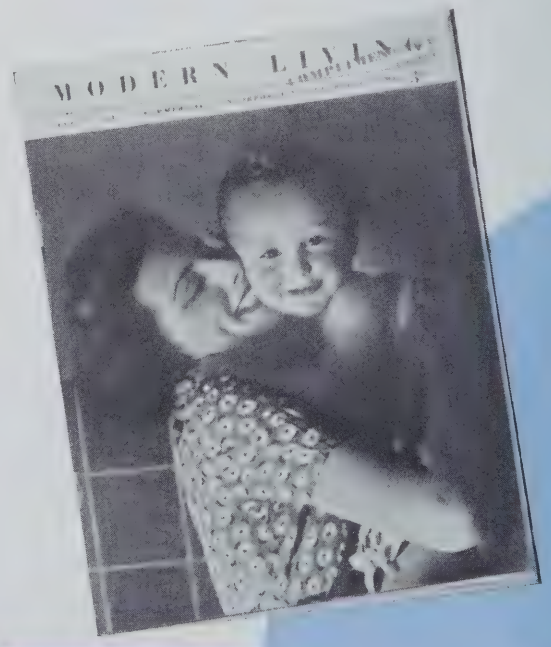
"MODERN LIVING" AGAIN

In the summer "Modern Living incorporating Hearth and Home" reappeared as a 16 page issue printed by gravure. Published by The Gas Light and Coke Co., this magazine is designed to appeal to the housewife, and there certainly could be no doubt as to the appeal of the cover picture. In rather subdued colours, the suggestion of light from a fire is excellently conveyed, and the narrow lemon-yellow band at the top carries the title in black with a red rule dividing it from the line below. This title is occupying a minimum space, giving the very attractive picture full play to catch the eye and arouse interest.

The back cover carries colour illustrations from a new Compton Mackenzie book on the Gas Industry "The Vital Flame," surrounded by a yellow background on which is one panel of copy and at foot the gas symbol "Mr. Therm" draws attention to the publisher's name and address, etc.

On the two centre pages, two-year-old Nigel McKinnon, the very attractive model shown on the cover with his mother, again appears in half a dozen further direct colour photographs by P. G. Hennell. The remaining pages are devoted to furnishings, fashion and cookery, with a "handyman" page all very fully illustrated, a quiz column and a children's strip cartoon.

A very attractive publication designed by A. N. Holden & Co., Ltd., London and printed by The Sun Engraving Co., Ltd., Watford.



PERKINS NEWS

Issued by F. Perkins, Ltd., of Peterborough, this magazine is printed letterpress and runs to twenty $8\frac{1}{4}$ in. by $10\frac{3}{4}$ in. pages of white art including covers.

The front cover shown, employs an unusual shade of mauve-pink overprinted on the left with a light tone of black for the surround, and the illustration is a full colour process reproduction of a fine colour photograph of a spider's web. Well taken against the light this is most effective with a few lines of interesting descriptive copy below in three languages. Similar in design is the back cover but without the black tone and again with a colour block. There is also a centre spread using full colour blocks for four corner-bled photographs of motor vehicles powered by P.6 diesel engines under the title "Perkins Pictorially."

The magazine carries quite a large amount of matter set to two columns to the page and is well broken up with a variety of half-tones. Blue is used on two or three pages for the half-tones and a few also are duplex using the yellow which is rather prodigally used for background panels on some pages.

I note that four pages give an interesting story under the title "Using a Tipper as a Horsebox" in English and also in French and Spanish.

The magazine is well printed by The Peterborough Central Printers, Ltd.

MORE HARLAND

Another clean and very attractive piece of work from Harland Engineering Co., Ltd., is reproduced here.

This is a four page folder $8\frac{1}{2}$ in. by 11 in., and is printed letterpress in blue and black with an additional printing on the cover of a pale lemon colour used on the name "Electroglide" and the lettering on the black half-tone arrows.

The blue, light in tone, is vignetted from the edges of the cover, thus enhancing the clean and well placed illustration of the pump.

On the two centre pages, a running headline

covers both, with the firm's name and address in blue also running across both pages at the foot.

The arrow motif is again in evidence, in blue this time, and pointing to two sectional illustrations of the pump, one in each top right and bottom left corners. These half-tones are on a blue panel with a vignetted inside edge and with an overprinted black tint.

There is rather a large amount of copy to be set to single page measure and if it had been possible to break this up somewhat it would make for easier reading.

Otherwise a nice clean job with design, copy, layout and drawings by Leslie Knight and perfectly printed by R. Cunningham & Sons, Ltd., of Alva. Blocks by Gilchrist Bros., of Leeds.

IS A COVER TITLE REALLY NECESSARY?

A NUFFIELD PUBLICATION

Here is a book without a title—just a symbol die stamped in white on the blue cover, and the neat little panel at the bottom right with "A Nuffield Publication" printed in white ink. The size is 7 in. by 9½ in. and the first and last eight pages are printed letterpress, the remaining 24 being gravure, a brown second colour being used for rule work to very good effect. The gravure section is thumb indexed with titles printed thereon in the brown.

The book tells the story of how the cars are made and takes the reader on a tour by word and picture of the great Morris organisation. Though times are not, to say the least, propitious for the present-day motorist and would-be motorist, the booklet is nevertheless most interesting. It is excellently produced, well illustrated by bled-off photographs, text nicely set to two columns per page and the layout as a whole very pleasing.

The production is the work of The Nuffield Press which, in 1925, Mr. Morris founded as the Morris-Oxford Press. As more factories were added to the organisation, the work of the Press increased rapidly and now it produces the five well-known Morris publications and an Export magazine *News Exchange*. In addition, catalogues, manuals, handbooks and all kinds of full colour publicity work are turned out in print orders of 200,000 at a time under the management of Mr. Douglas Hewat.

PERMUTIT WATER SOFTENERS

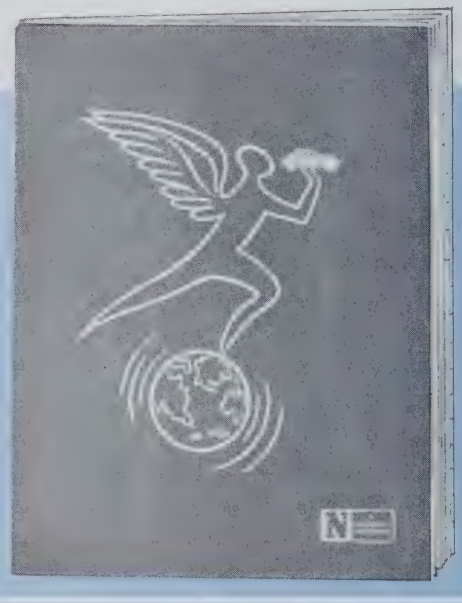
"She sent slaves forth to gather the dew" may or may not have given some clue as to the contents of this brochure. The words and design of this cover, however, would not be passed over by the fair sex without a peep inside.

Printed in black, grey and pastel shades of green and crimson it is unusual and attractive, and 40 pages of text and illustrations are so pleasingly arranged that one feels invited to read and to study the drawings and photographs.

It is 7½ in. by 6 in. in size and the first half of the brochure delves into ancient history and traces mankind's long search for pure water leading up to the modern science of water conditioning. Here are clever little sketches in black and using one of the colours to picture simple reproductions from ancient pottery, etc., and very attractive photographs picturing the delights of the modern Miss—and soft water.

Following, "What the camera sees" illustrates the effects of water on household glass, pottery, cutlery, kettles, water pipes, the hair, etc., then a list of well-known users, followed by reproductions and details of the various models.

An admirable little production for the Permutit Co. Ltd., with excellent art work by Esmé R. Roberts and very nicely printed by The Bayard Press.

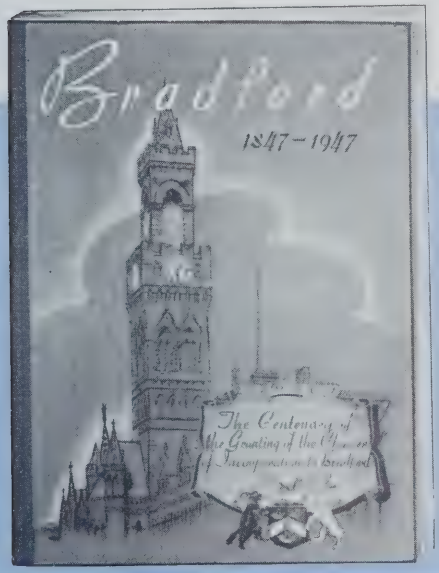


AUSTERITY PAPER —WASTED BOARD

BRADFORD CENTENARY

Of necessity an austerity production, this 7 in. by 9½ in. Centenary Handbook commemorating the granting of the Charter of Incorporation to Bradford is very attractively designed and is printed gravure by Wm. Byles & Sons, Bradford.

The cover design, reproduced below, depicts the Town Hall very nicely in pencil with a fawn background. The word Bradford is in gold and embossed, 1847 is in red, 1947 in black, and the panel is outlined in green and black with the coat of arms employing red, blue, black, gold and green, the small amount of gold again being embossed.



Very fine aerial photographs by C. H. Wood occupy the inside of both covers and the end papers, and the photographic background of cloth is an appropriate motif on the title pages.

The great majority of illustrations bleed off the pages and the type matter is well placed. I like the well designed headings to the five sections of the book and the occasional use of a rule running off page edges to terminate copy may not sound much in so many words, but is in fact a simple but effective detail in the design of the page.

Profusely illustrated, the handbook also incorporates eight pages of four-colour process reproductions of paintings of old Bradford by N. S. Crichton.

One could naturally wish for better paper for this type of work but the handbook is very competently designed by Donald Haig.

SOONER OR LATER!

Printed letterpress in sepia and green and Spirax wire bound, this twelve page booklet rather surprisingly uses a thick white art board throughout and was designed and produced by Birmingham Commercial Films, Ltd.

Looking at the cover one finds considerable difficulty in reading the title which, being placed on a montage photographic design, should at least be bold, and so positioned as to stand away from its background. The lettering is poor and the angular positioning appears to have been chosen merely because here is the only bit of solid ground where it could be placed. The border is in green, which is certainly a nice bright green.

On turning the cover, I was much pleased with the very neat and well-designed title page which is most attractive but turning again, I read in the text alongside portraits of the directors, " A great believer in the power of the picture. . . ." In view of this statement, I am surprised that the pictures used in this booklet have not been used to greater advantage. By using a lighter weight of material for the pages they could have been more in number with consequently far greater scope for, say, larger bled-off illustrations, which would have given them both greater importance with better effect to themselves and the page layouts in general. After all pictures are the essence of this firm's very existence. The booklet is nicely printed by Devonshire Brown Ltd., Birmingham.

TWO INTERESTING AMERICAN FOLDERS

THIS folder, "Colour in Electromagnetic Energy," is $3\frac{3}{4}$ in. by 9 in. folded, and comes from the Sun Chemical Corporation, New York.

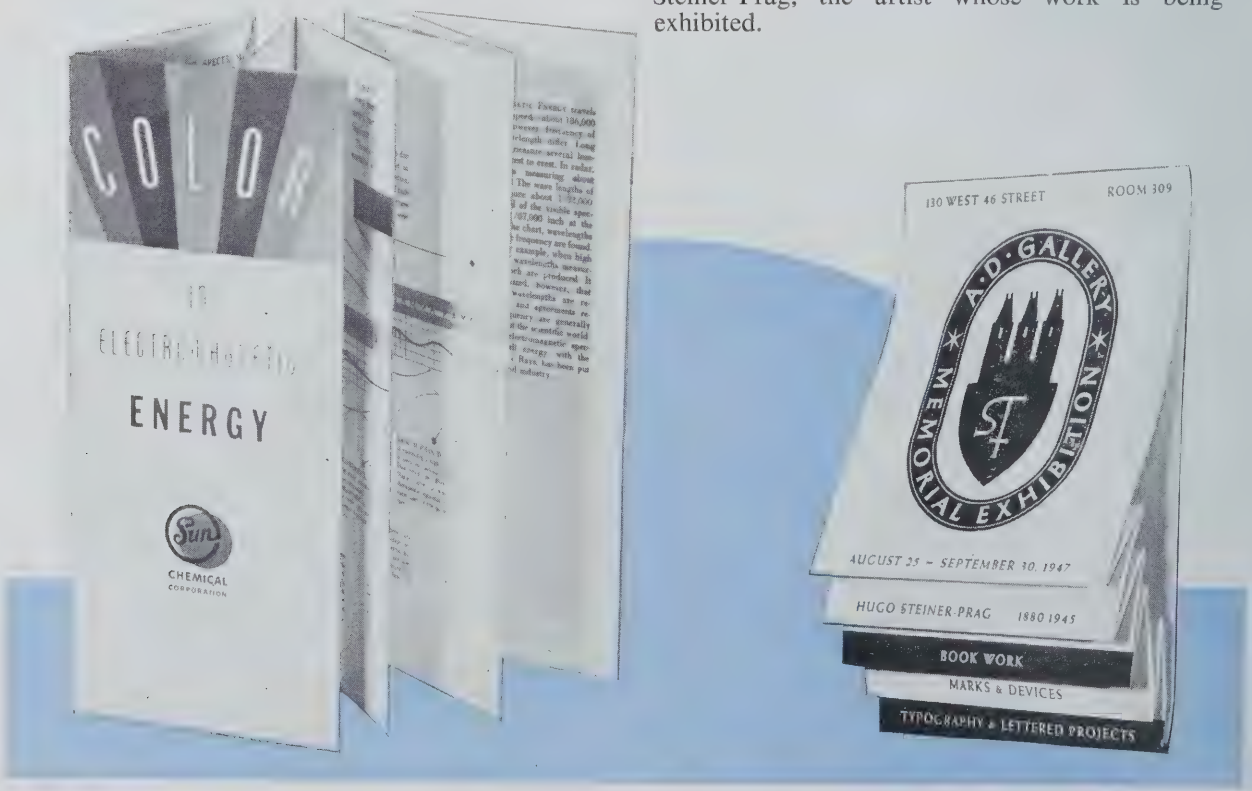
The cover has nothing outstanding about it with the seven colour sections at the top, black title and the effective symbol beneath. But the concertina type fold is the real point of this specimen, and this will be clearly seen in our reproduction on the right below. When opened fully this type of fold gives full scope to the chart which runs over seven of the pages with descriptive matter neatly set on the remaining first and last page. The chart is in colour, listing the derivation of colours and driers from certain metals, used in the manufacture of inks and paints.

This type of fold is, of course, most useful for the diplay of a large amount of matter which has to be seen as a whole, as for instance, the chart in this example. It will be realised that 33 in. which is the width of this fully opened folder, gives scope for display which no catalogue page could ever do. The back, also, may be used similarly or as separate pages, remembering that the front and back of the folder fall as the two right-hand pages and the left-hand page will be the first seen when the folder is opened.

ADMITTEDLY, only rarely does the occasion arise when a multiplicity of folds is thought to be worthwhile. Yet who knows, one day when some special event takes place here, some very generous person or concern may persuade or may even be persuaded by—a printer with ideas to bring forth something "different."

However that may be, I think the folder shown on the right below is most effective, and although the folding has taken considerable time and care —for any departure from true parallel folding would ruin the effect—this exhibition is one of those very special events which call for, and have here received, a very special attempt to create something original and novel. It is printed in red and black and was designed by Kurt M. Plowitz. Typography by The Composing Room Inc.; Engraving by Arrow Engraving Co., Inc.; and Printing by Advance Printing Co., Inc.

The oval is red with white lettering, the symbol in the centre being black. The date line is red, the fold beneath bearing black lettering, "book work" white lettering on a red panel, "marks and devices" black lettering on white and the following line reverting to white letters on red. The last small fold does not show on our reproduction but bears the production details given above. The size as shown is $8\frac{1}{2}$ in. by $5\frac{1}{4}$ in. and beneath each fold is given brief notes regarding Hugo Steiner-Prag, the artist whose work is being exhibited.



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LET'S DISCUSS PRINT BUYERS PROBLEMS

with **NORMAN SKINNER**

ARISING out of the introductory article under this heading in our last issue are a number of queries based much upon the same theme: **"How does the compositor arrange his type, ornaments, blocks, etc., for printing in two or more colours?"**

In view of the amount of interest which is always displayed in this aspect of the printer's work, I am devoting these present comments to the various problems constantly arising in connection with jobs of this nature and will endeavour to show how colour results are obtained.

First of all it is essential to appreciate that every colour must be printed as a separate entity. Whether they are printed on separate machines at different times or whether they are printed on multiple machines in close succession makes no difference—the type and blocks of each colour must stand alone.

A very simple example of this is to be seen in Fig. 1. In this advertisement three colours are to be employed: black, red and blue. As shown here, it represents the compositor's first setting in one colour. This is desirable and often imperative in order to be able to see the advertisement as a whole, so that spacing and general appearance can be checked. When these points have been satisfactorily decided, the process of taking out the necessary lines for colour can proceed. Such colours will, of course, be indicated by the client. For our example, Fig. 2 shows the lines to appear in blue, Fig. 3 those to appear in black and Fig. 4 those in red.

It will be seen that having taken a number of pulls from the *complete* forme, they will serve as guides for positioning the other colours. By folding one of the pulls lengthwise down the centre it can be laid across the appropriate lines so that these can be readjusted to occupy their original positions, *but in a separate forme.*

PAPER & PRINT

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•

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Fig. 1.—The complete job made up in one colour in the first instance.

•

Fig. 2.—The blue forme.

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Fig. 3.—The black forme.

PAPER & PRINT

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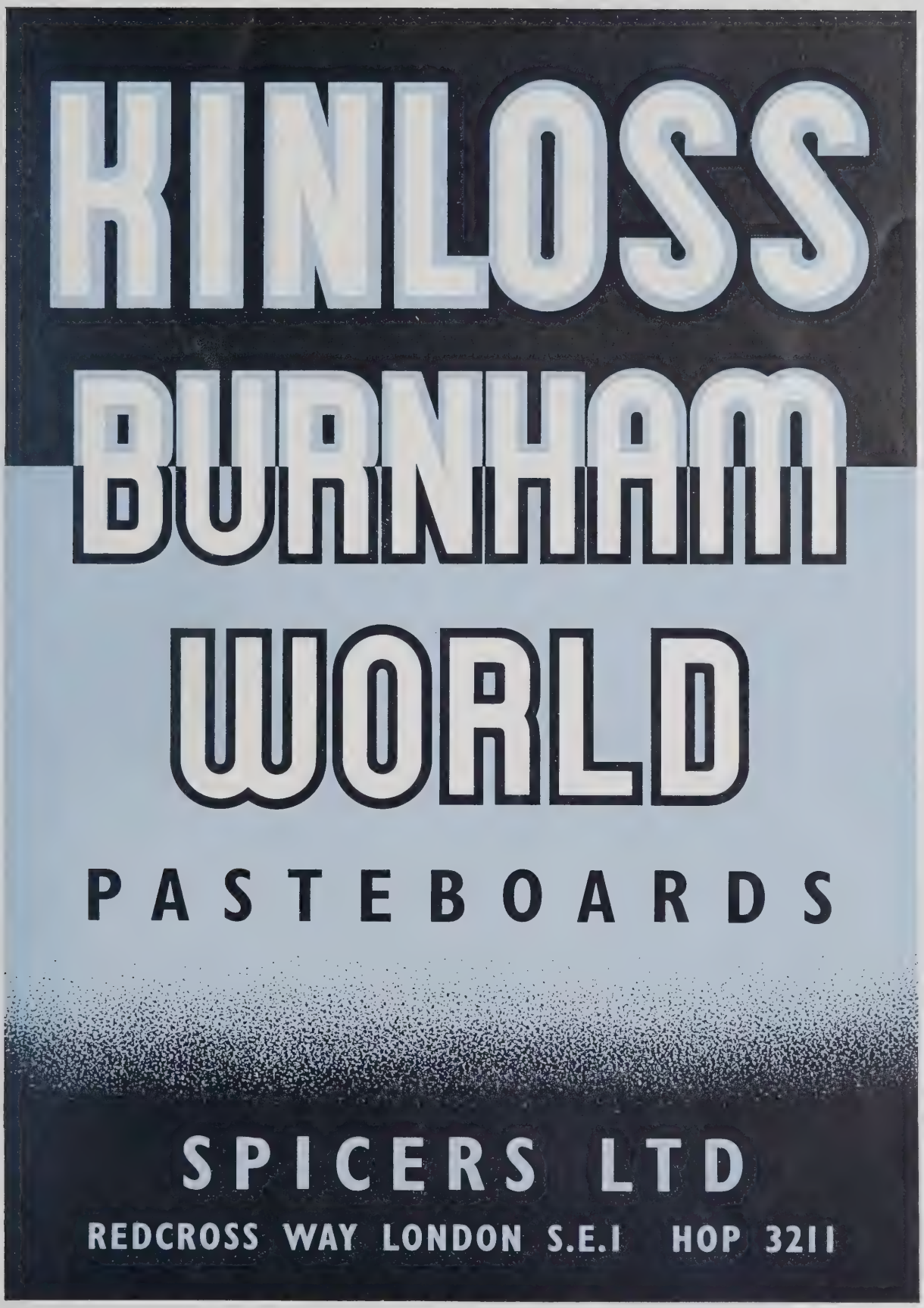
Fig. 4.—The red forme.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Having completed the make-up of the three formes, they are now ready for printing. Which to run first? Obviously the forme which will provide the "key." It is not always so easy to decide upon this, however. Even in our simple example the blue provides the key to the extremities (for the job must be a given depth) and the top and bottom rules supply the answer to this; but the spot in the centre, on the other hand, might conceivably be a fraction out of place in the final make-up—although if reasonable care has been exercised this should not occur.

Assuming we are sure of this position and have checked beyond doubt the overall depth and the placing of the spot, we can go ahead and print off the requisite number of copies. What next? The black seems a reasonable proposition. Here again it is not impossible to make a mistake and careful checking with the one-colour proof is essential before printing. To complete the job we finish off with the red and if every operation has been done with care the result will be satisfactory.

That gives us a rough idea of the procedure followed on a very simple job. Most of the work coming from up-to-date print-buyers is, of course, far more complicated and demands a greater intricacy of procedure.

More Complicated Work

In our next illustration (Fig. 5) (reproduced with the kind permission of the designers, A. Anderson, of Guildford) we have a typical example of a page likely to be encountered in modern brochure work. While this is not complicated from a register point of view, it is an excellent example for our present purpose of showing how position for colour has to be obtained.

To reduce block costs, you, as the designer responsible for production of the book, will naturally choose the cheapest method of having them made. Quite right, too—they are expensive enough, goodness knows. Therefore, assuming the original photographs are all of similar proportions your half-tones will be made close together and separated for the nominal cost of separation charges. The line "A 'Maxicut' cuts idle time" will be a simple zinco. The solid and tint red in the centre is, of course, one block, and the top and bottom tints would again be made close up and separated.

This means that the printer has eight pieces to juggle with. From his point of view, but not economically possible, the ideal way would be to have the blocks made as a whole and registered for colour photographically. Hardly likely when considered on the square-inch basis!

Taking the blocks separately then, the printer "makes them up," as near as it is possible to judge, into correct positions. But this cannot be done with certainty. Therefore he must wait until he has the job on the machine before he can be absolutely confident that his positioning is dead accurate.

Look at this page carefully. It bleeds top, bottom and left-hand side. Visualise the black only—could you print it and say that these positions were correct without any check? Again, visualise the red only and ask yourself the same question. This is one of those jobs where neither colour provides a "key." Both will have to be proofed on the machine on which it is to be printed before a final O.K. for assured position can be given. This latter is a technical point worth noting as a matter of interest. It is very risky to press into service any machine but the one to be used for final printing. Each has its idiosyncrasy!

It will be seen, then, that even an apparently simple layout can involve the printer in not a few complications. To produce a good job of this nature is full of such problems and accounts for much of the ultimate cost—unseen problems, but very real.

A 'MAXICUT' CUTS IDLE TIME
Change gears are conveniently located at the side of the machine
Changing the cam gear ratio is effected by merely pushing or pulling this button
Saddle controls are centralised and the traverse handles are now required to be moved in the same direction as the required saddle movement

Fig. 5.

A two-colour page where neither colour constitutes a definite key.

A subscriber writes: I have recently seen an outsize postcard 12 ins. by 8 ins. Is this legal?

Yes. Mailing cards are allowed to be sent up to 2 ft. by 18 ins. at Printed Paper Rate. These were used a lot before the war to carry "impressive" messages. There are a number of drawbacks if used too large: they will not pass through letter-boxes without folding; if of heavy card they are liable to crack badly; if of thin card they reach their destination in a limp and entirely unimpressive condition more calculated to repel than attract! It is a good plan to send a few "test" cards through the post before deciding on this form of publicity.

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Leeds, Belfast, Dublin

Making a MOULDED, FIRE RESISTING, PULL-OFF CASE for very valuable books

by THOS. HARRISON, M.B.E.

THIS case is misnamed by Americans as a "Solander" case. The Solander case was designed by Dr. Solander of the British Museum for conveniently holding prints and has no relationship whatever to the moulded case.

When the famous bindery of Robert Riviere and Son was burnt out about the year 1897, there were in hand many extremely valuable books to be put into moulded cases. The cases that were completed and contained the books were scarred but the treasures inside them were entirely unharmed. The books not yet in their cases were not so fortunate. It must be approaching a century ago when the eminent Mr. Joseph Zaehnsdorf, having made and delivered a moulded case to Mr. Quaritch, as called before a gathering of Antique Book Lovers to be put to a very severe test of his confidence in his workmen and the quality of his boxes to withstand the test of fire. Mr. Quaritch asked him if he claimed the case he had just delivered was fire-resisting. With his customary assurance, he unhesitatingly claimed that it was. Mr. Quaritch then picked up a book which he said was worth £400, put it in the case and threw it on a roaring fire which had been prepared for the test. The company then fell into general conversation and waited. In the meantime, the fire was being constantly poked to keep up the fiercest possible heat until assured a satisfactory test had been made. There was, however, a further and final test made when water was thrown on the fire to cause something like an explosion. The poor charred case which had previously been given devoted care, honest, careful and superb craftsmanship, was lifted off with the tongs, the lid removed and the £400 book was no worse for its ordeal. A triumph for Victorian craftsmanship and a triumph for Mr. Zaehnsdorf's confidence in his workmen. In the latest American book on Bookbinding, a description of

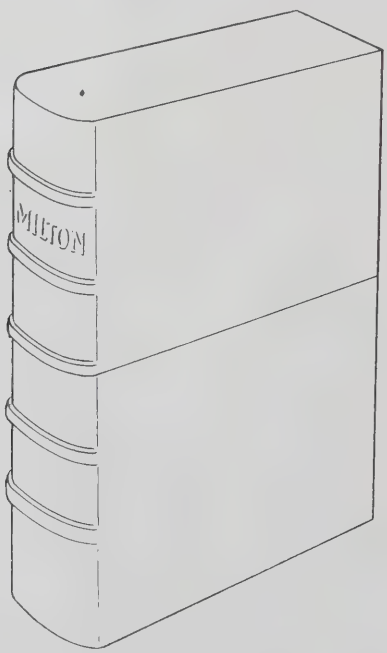
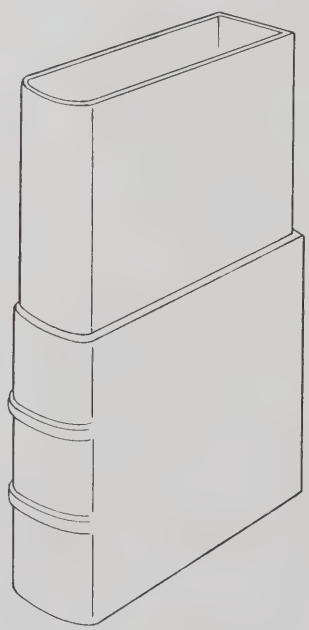
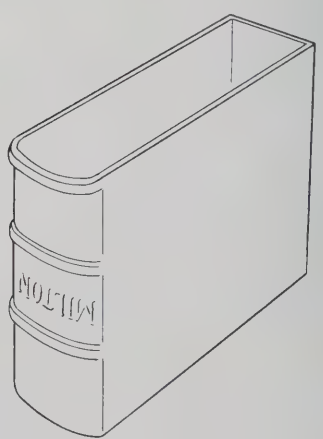


Fig. 1. Moulded Fire-resisting Pull-off Case—closed.



Case with lid off showing leather neck.



Lid from the case.

LINUM USITATISSIMUM - the Flax Plant, yields linseed oil from its seeds and linen fibre from its stem. Probably the earliest vegetable fibre used by man, it is today cultivated as an annual in many parts of Europe, Russia and North America. The fibres, in the form of spinning waste, rags, etc., are used in the manufacture of many hand-made and other high grade Writing, Tissue and Cigarette Papers.

Tullis Russell & Co. Ltd.

THE PIONEERS OF TWIN-WIRE PAPERS FOR PRINTERS

such a case, wrongly called a Solander case, is given and the method of making it. The method described is not fire-resisting to the extent of the Victorian one and I am afraid Mr. Zaehnsdorf would not have complacently stood by and witnessed such an ordeal with a case made to the American specification. It is now nearly 60 years since I first saw moulded cases made, but I have never been able to find out how and when they originated. My impression, however, is that they were a development of the fancy leather goods trade, for in my youth I have made and seen many cigar and spectacle cases of similar construction. Not that this fact is any recommendation, but I know of no other origin, and I firmly believe their fire-resisting quality was never designed, but discovered by accident or intelligent anticipation before positive proof. There may be some doubts about their aesthetic appeal, but that is far outweighed by the fact that a very valuable book, however far-decayed, can safely take its place on the library shelf without fear of further damage and an assurance of protection against fire.

In making one of these cases, the condition of the book must first be considered. A book in the condition of almost complete collapse may need a four-fold wrapper so that it can slip in the case without fear of further injury. If the cover only is frail then a simple folder is all that is necessary, but if the complete book is sound the case itself is enough protection.

The first procedure then, is to make a block the size of the book, or book and folder together, or book and wrapper together, but extended in length head to tail about half as long again. The two measurements taken, thickness and width back to fore-edge, must be dead true. The book must slide in comfortably without effort or strain or it may sustain damage, and when it is in its case it should be so snug that no movement will take place when the case is handled, for rubbing may injure a delicate surface. The block may be made of wood or built up with millboard, the surface made perfectly smooth and then well dressed with french chalk. An absorbent block may advisedly be treated with size first, and then well waxed.

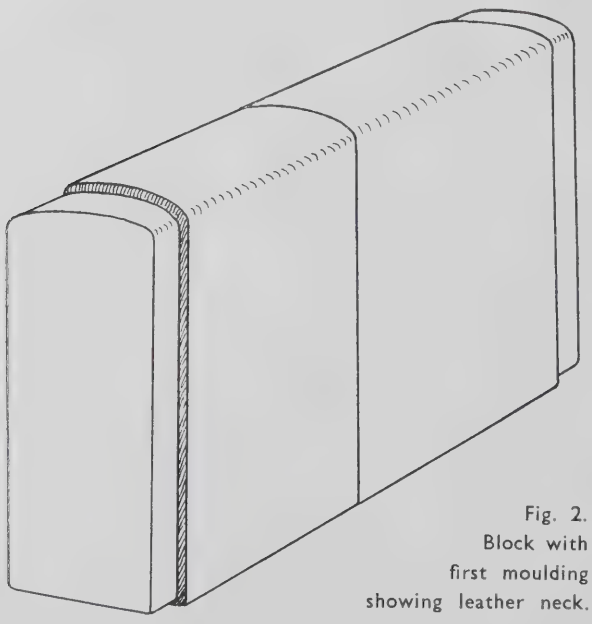


Fig. 2. Block with first moulding showing leather neck.

The block being ready, the case is now built up from inside, commencing with the lining. Paper, silk, cloth or leather may be used for lining. At this stage the lining must be substantially longer than the book head to tail, in fact, almost as long as the block. Some craftsmen cover the block with a thin paper attached to itself only but not the block. They feel more confident of the lining not sticking to the block. I have not found this necessary myself. My own preference for the lining material is a good, smooth, hard sized, hand-made paper. The straight edge of the fore-edge can be used for making the overlapping join if the lining is paper, silk or cloth and may be doubled on the fore-edge. Leather may be spliced at one edge of the fore-edge. Whatever the lining consists of, the join must be very secure and leave no bulk to show on the outside, and it must fit perfectly snug to the block. There must, however, be no particle of adhesive escape on the inner side or it will stick to the block. As a precaution against this happening, when partly dry the lining must be moved up and down on the block to make assurance doubly sure this has not happened. When perfectly dry, the lining can be removed, the book fitted in, also an assurance for fitting and if all is well it can be replaced on the block and all subsequent operations proceeded with in confidence that all is well. If the fit is not perfect, then the block must be modified accordingly and a fresh start made. A continuous series of layers of paper are glued or pasted to and over this lining, each layer drawn firmly over the previous one, and each layer well rubbed down and consolidated before proceeding to the next. The fore-edge must be kept square and flat for the case will eventually be expected to stand on its fore-edge as well as its tail. A good quality brown paper is generally used for this moulding and it is most frequently glued. My own preference is a good quality hand-made paper, moistened well with hot water to soften the size and then pasted. This method, however, takes several days to dry, but this work can't be hurried if it is to achieve its purpose. It is advisable after

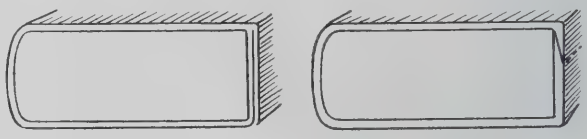


Fig. 3.

Section showing the overlapping lining on the foredge.

Section showing the splice of a leather lining.

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selecting the paper to paste a number of pieces together up to the desired thickness and note how many layers are necessary to make that thickness and when building to note that number. As a general guide I should say the thickness of the inner layer, which we are now considering, for a crown octavo book should be no less than an 8d. hand-made board which is equal to standard wire gauge 15. As these layers are drying, this interior should be occasionally moved on the block to make sure moisture in the adhesive is not causing any adhesion of the lining to the block. When bone dry, which may be several days, this first casing is cut perfectly true and evenly at the head and the upper portion finally becomes the neck requiring very special consideration. This neck will be covered with leather to about halfway down, rather more than less. The leather must be of the finest quality, preferably a morocco, and may quite well be the same as the cover, but there is no objection to a lighter tone or even a contrast to the cover if so desired. It was customary to use what was called a bees-wing morocco for this purpose, but as that appears to be non-existent, the neck piece must be pared down very thin and very, very evenly. The top of this neck must be bevelled off so that the lid may eventually engage more readily, but to a distance not exceeding $\frac{1}{4}$ in. On the inside, to almost the same depth, the surface must be sanded down to equal the leather turn-in which should be pared to a feather edge. If bulk is left on this turn-in, the inner mould will not return to its place on the block and not fit the book. The join must be a feathered splice and made at one edge of the fore-edge, short only by 1/32 in., and above all there must be no bulk at the splice. When dry, this leather must be very highly polished, consolidated to the extreme, and

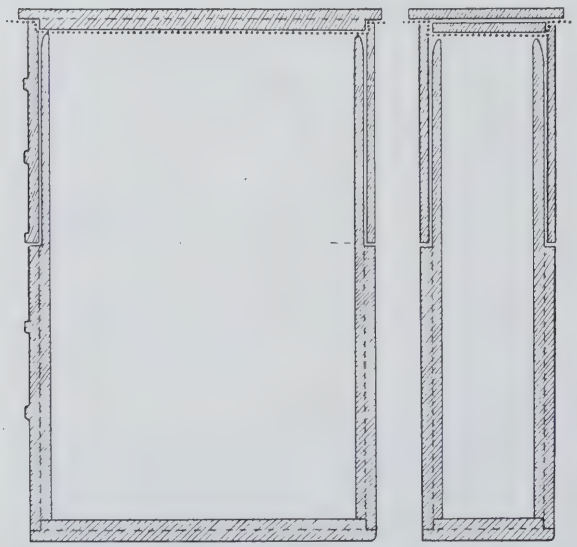


Fig. 4.—Section showing untrimmed head-filling. The dotted line shows the fitting of the lining. The tail trimmed.

leaving no irregularities whatsoever. It only remains now to complete the thickness of this inner case at the tail to the thickness of the leather-covered neck. One or two layers is generally sufficient, but it must be exact.

The inner case being complete, proceed exactly as before, building the outer case over the inner one. Lining as previously with frequent tests for assurance there is no adhesion to the under moulding. Any adhesion to the leather neck would be disastrous in the extreme. Again build layers of paper to the thickness of the previous one or even slightly in excess. Move the outer over the inner occasionally as it dries, but don't proceed further until it is bone dry. The two moulds may now be separated and the inner one carefully and truly cut off at the tail to the exact size of the book head and tail. Some people prefer the neck to be shorter than the book so that the book can be lifted out comfortably. Others prefer to have a thumb hole cut out, whilst others prefer a ribbon lifter. The short neck gives a

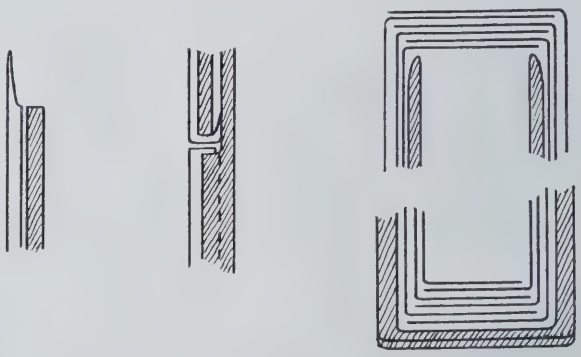


Fig. 5.

Section showing "abrupt" paring.

Section showing result of the paring.

Section showing the moulding of head and tail as distinct from the filling.

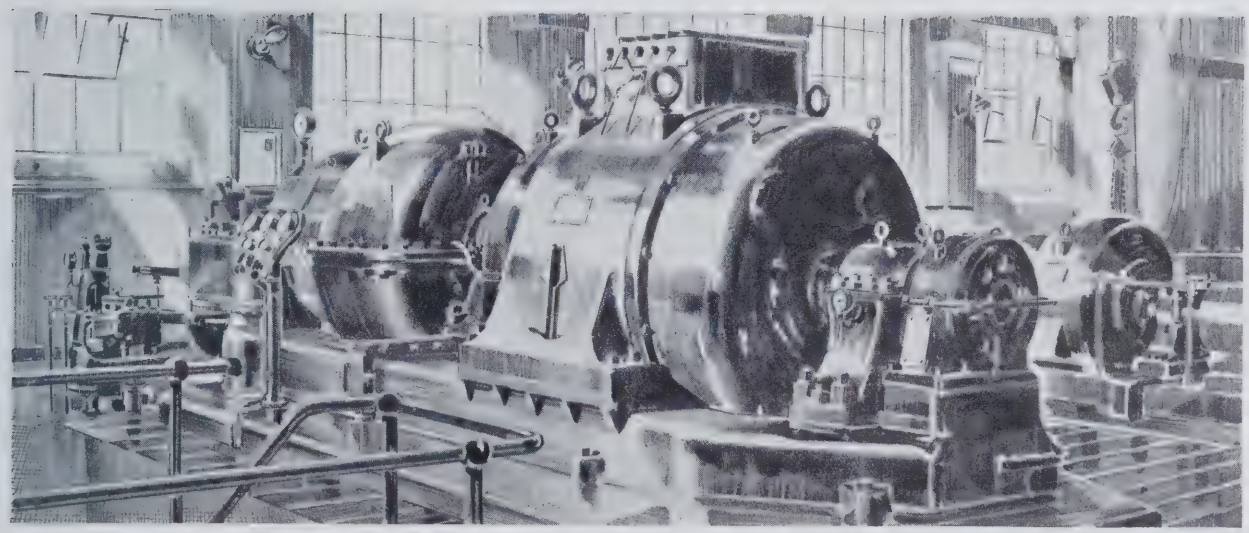
feeling of the lack of complete protection. The ribbon lifter is generally neglected and lays in a crumpled heap at the bottom and the thumb hole is inclined to disfigure the book. My preference is to leave the neck full size and tip the book out into the hand. From this, the size of the outer case can now be determined, the lid cut off and the ends closed in. First cut two strips of good stout hand-made millboard exactly the size and shape of the inner mould. This will then fit just inside the outer mould head and tail. Place these temporarily, mark position and cut off the mould flush with filler. As there will be another similar piece of millboard on the outside of the filler, allow for this additional height, mark up the back for five bands and cut the outer case in two with a very clean cut, immediately under the third (i.e., middle) band. The upper portion can now be

Continued at foot of page 286

Work and turn...

The process in printing, of Work and Turn requires, for a satisfactory job, a paper without a pronounced underside.

Cowan's provide such a paper.



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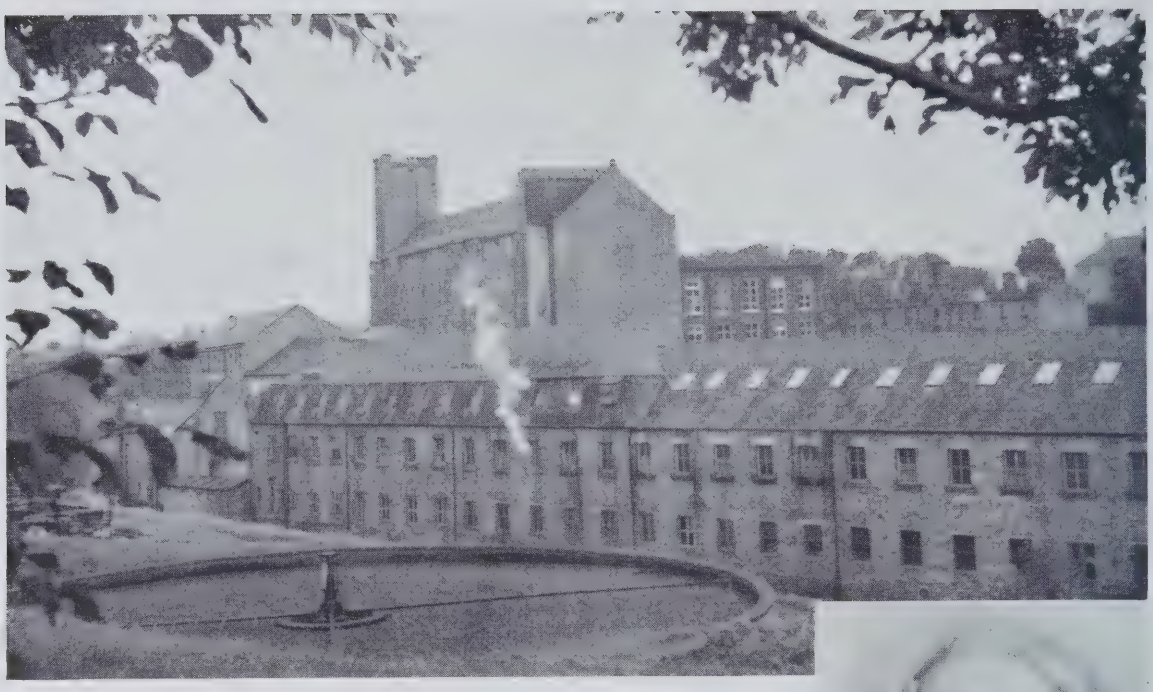


The Late
Mr. Peter McLaurin

PAPER CONVERSION

The Story of Smith & McLaurin Ltd.

A REMARKABLE record has been set up by Smith and McLaurin, Limited (Mill No. 1, Scotland) in the realm of paper staining, or paper conversion as it is now termed. The business, located at Cartside Mills, Millikenpark, Scotland, was established as long ago as 1849, and there has been a McLaurin at the head of it for the whole of the 98 years.

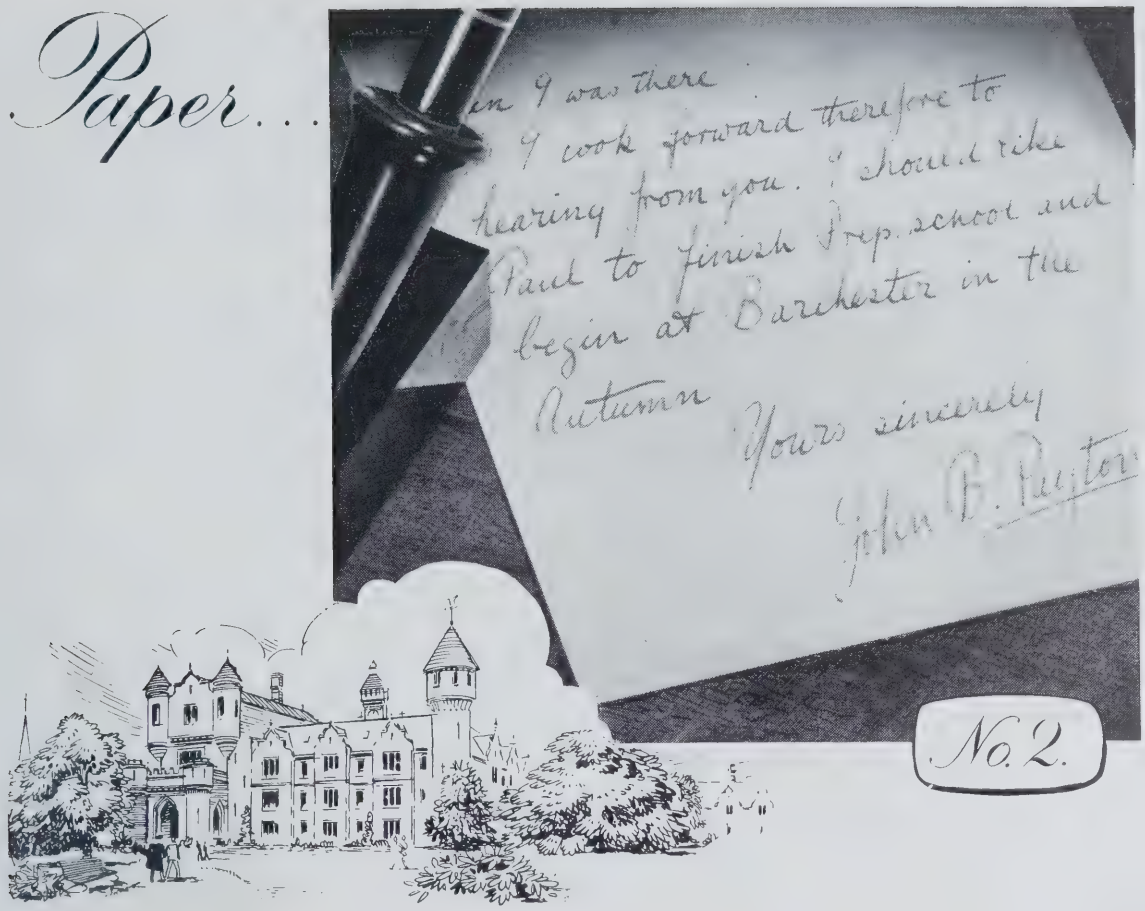
The present chairman, Mr. Archibald McLaurin, can recall incidents connected with the paper industry covering a period of 70/76 years. Indeed, his knowledge of the concern goes further back still, since he has had the benefit of the experiences of his father, who passed away at the age of 92, after 80 years of active service in the paper trade.

Mr.
Archibald
McLaurin

Smith and McLaurin have been pioneers in the conversion of papers. Mill No. 1 (Scotland) now comprises five units devoted to coating, gumming, pasting, stay paper and sealing tapes. Initiative, courage, and enterprise have been conspicuous in the development of the business.

The elder McLaurin left Denny as a boy and served his apprenticeship as a stationer with his brother James in Glasgow. A man of strong personality, he earned a reputation for penmanship when he became accountant and secretary to E. Collins and Sons, Kelvindale. He was keeping the books of this firm even at the age of 19. It was Joe Collins, his "young boss," who encouraged Peter McLaurin to join up with Richard Smith in 1849, though he made it a condition that he was not to leave until he had trained a successor equally as good a writer and bookkeeper. Mr. Archibald McLaurin still holds his father's private journal from 1850 onwards. This is a perfect work of art.

Paper . . .



. . . PAMELA AND PAUL

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Richard Smith was already an old man when McLaurin Senior joined him, and had been in the business for 30 or 40 years. Although a first-class practical man, he was no bookkeeper, and he wanted young blood to keep his books and run the business. McLaurin was just the man for the task. But he had to do double duty for two or three years—working for Collins during the day and doing his new task in the evenings. By that time he had trained a successor (Mr. Harry Stewart).

Recalling this phase of his father's career, Mr. Archibald McLaurin says:

"Years afterwards, Mr. Harry Stewart, Collins' Secretary, calling for his usual order, I remarked that he wrote exactly like my father. He laughed, and said 'A weary time I had until I could do it, and I had to copy your father's writing exactly, before I was allowed to touch the books.'"

Mill Numbers

At the time that the elder McLaurin joined up with Richard Smith, the manufacture of cardboards and pasteboards was carried on at Port Dundas. These were the days when a duty on paper was levied, and in this connection identification numbers were allocated to mills. These did not necessarily refer to the order of origin, for when a mill fell out, its number was transferred to another. No. 1 having become vacant, that number was conferred on Cartside Mill. As the mill was under Government control, the number had to be painted on the works and printed on the letter headings. Thus customers were assured that duty had been paid and they could accept the products of the mill with perfect safety. Excise Officers under this regime had the right, as they have now in the case of distilleries, of entering works at all hours, examining stocks, and checking books.

The system of conferring on a mill a number left vacant, gave rise to misconception in later years. For example, as Mr. Archibald McLaurin points out, Moffat Paper Mill, which was started by his grandfather in 1822, was given the number 62, whereas Port Dundas Mill, which began the process of pasting probably at a later date, became known as No. 1 (Scotland). Messrs. Alex. Pirie and Sons and Smith and McLaurin were the only two manufacturers of pasteboards in Scotland at that time.

Cartside Mill

By the year 1868, Mr. Richard Smith had passed on, and his partner (Mr. Peter McLaurin) was sole proprietor of the firm. Increasing business and the need of more space, caused the enterprising McLaurin to seek larger accommodation. Accordingly, he bought from the then Laird of Johnstone, Cartside Mill (shown on the previous page) and some 30 or 40 acres surrounding it, together with the Mansion House and the workers' houses round about.

Built in 1783, Cartside Mill was one of five cotton mills on the Black Cart. It was then driven by three water wheels, exhausting by separate tunnels, under the mill, into one tail race. These wheels, it is interesting to recall, drove a shaft the whole length of the mill, thence by upright shafts and cogwheels to each of the seven floors. This old original structure still stands and is as stout as ever, having stone walls 3 ft. thick and housing one or two coating machines in every flat.

Link with James Watt

The Laird of Johnstone was a man of character and practical enterprise. Mr. Archibald McLaurin recalls:

"The Laird encouraged craftsmen to come to his town by offering good sites and plenty of work at his cotton mills. His first foundry and engineering importation is still working and occupies the original site.

"As time went on he realised that his water supply, owing to improved agriculture and drainage, was becoming intermittent, and contacting James Watt, Glasgow professor and the pioneer of the modern steam engine, he got one of his original beam engines connected up to the main shaft for use at short water periods. This was a most impressive and massive machine, and years afterwards, after examining the example held then by the City of Glasgow in Kelvingrove Park, I realised that we had possessed and had broken up a much finer job. It worked with 15/20 lbs. steam pressure and we got 14 lbs. extra by the splash jet condenser. I never remember any repairs to it, and when we sold it, the break-up man considered he had made a bad bargain, as it was cold blast iron and as hard to break up as steel.

"When we finally demolished this engine house in 1919/20, the large wooden beams above the old engine (there were no steel girders when they were installed) were in wonderful preservation."

When Cartside Mill was taken over, most of the old employees followed the firm from Glasgow, influenced, apart from their loyalty, by the circumstances that ample housing accommodation was available and the fact that they knew their trade and no other.

From Hand to Machine Operation

Mr. Archibald McLaurin's recollections of the converting business covers a particularly interesting period, since machinery (reel) was beginning to supplant sheet methods, which had operated unchanged for some 70 or 80 years. He has had the privilege, therefore, of seeing the gradual evolution of the process from that time to the present date.

Writing of the coating methods in vogue when the firm went to Millikenpark, Mr. McLaurin says that in those early days there were no coating machines, all the work having to be done by hand. As in the case of oriental carpet making, where the operative has to tie a knot with one

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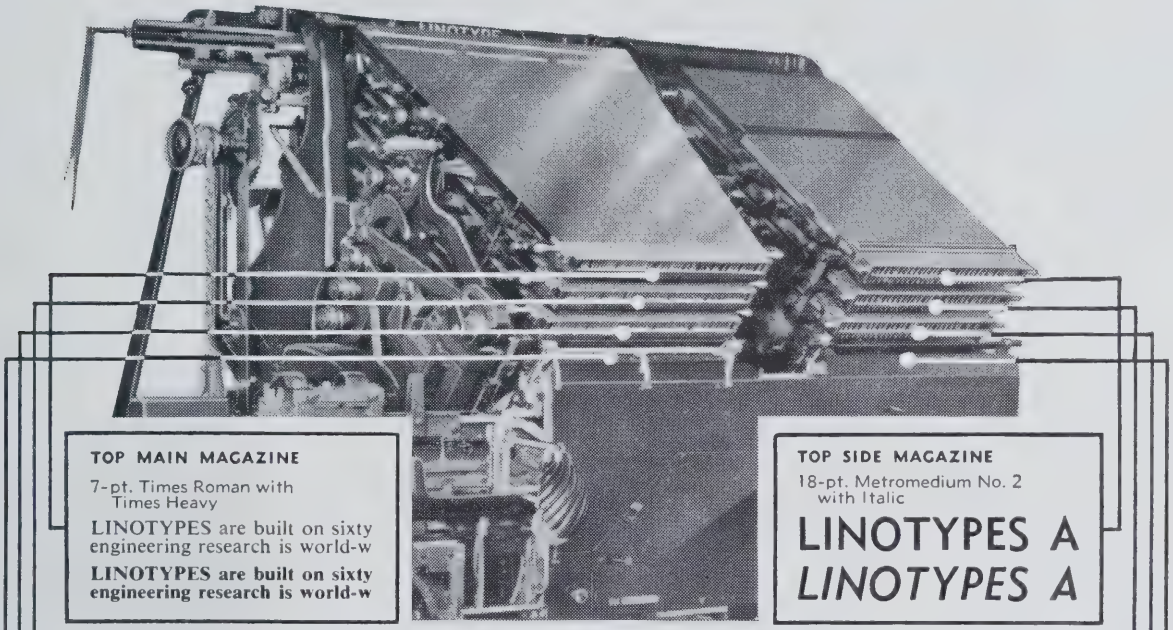

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hand, some of the girls could never learn the art.

As the present generation has probably never seen the tools then used, Mr. McLaurin has furnished us with a description of them and rough sketches. Fig. 1 is the layer-on brush and Fig. 2 the clearer brush. The layer-on brush had a wooden handle which the girl operative held while she dipped the brush into the colour tub.

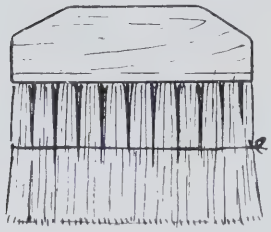

Fig. 1.

Fig. 2.

Mr. McLaurin proceeds to describe the work in these terms:

" The long hair of the layer-on brush was bound by a string at a point which the nature of the colour and the weight of the coating demanded, the brush being dipped into the tub up to this string by the coating girl.

" The clearer brush was then taken in hand, and, starting at A with a swirling motion from left to right, the operator went round to B C D and back to A (Fig. 3). Then followed up inside until the sheet was all cleared. The brush was held loosely as this gave more even clearing, the shape of the handle enabling this to be easily done.

" The girl then lifted one corner of the sheet, inserted a small square-shaped lath in below, and hung the sheet on a rack which moved back until full. It was wonderful to see how expert these girls became by long practice and payment by piecework.

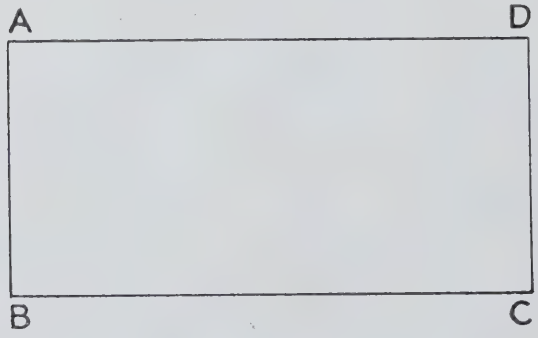

Fig. 3.

" This was the only method for coating in those early days, but shortly after taking over Cartside Mills, my father appointed an Englishman as manager. He was a wallpaper man, and had been associated with the creation of the first Web Coater. Accordingly, these machines were installed here, the first in our trade.

" These early machines followed the traditional hand coater. The feed was a circular Brush Feed, running with paper to ensure easier running through the machine, as there were no pneumatic blankets envisaged then, and the brushes were as shown in the accompanying sketch (Fig. 4).

" There were no turntables. The reelers were at the end of the flat and boys were employed to feed the laths on to trollies running on rails, take them back to the machine and feed them by hand into the Lathbox.

"We made wallpapers, then, on these machines. They were, of course, somewhat crude in design, and had not reached the present day standards in the matter of taste, being confined to lines of varying colours. A colourbox below the brush, with varying compartments for different shades, made this possible.

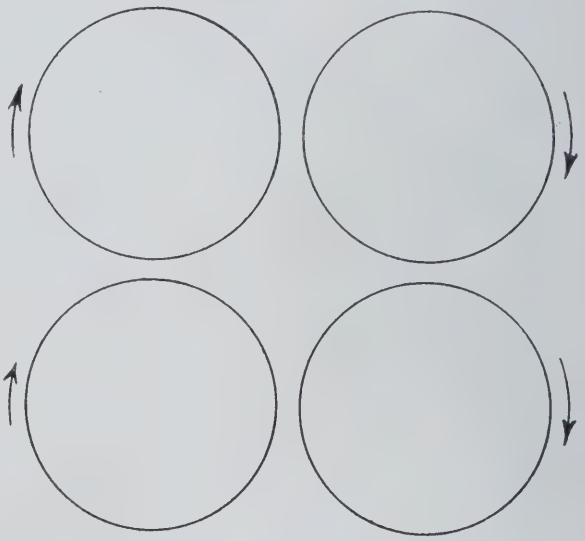

Fig. 4.—These brushes were shaped similarly to the Hand-coating brush. This ensured that the brushes did not catch edges of the paper going through the machine.

" My father was not satisfied with these first machines; the brushes required too much setting. He therefore engaged a firm in Glasgow to make the first jig brush machines in our trade. They were flat bed machines, but otherwise substantially the same as those in use nowadays. They did good service for years. Our chief objections to them were the uneven length of folds, caused by slight drag variations, there being no pneumatic device to produce a steady pull.

" By this time we were going out of the wallpaper trade and producing papers for printers and boxmakers. For boxmakers we needed a high finish. To this end we evolved our own brushing

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machines (Fig. 5) which worked well for years. The procedure was as follows: The paper was coated with satin white (only two makers in London produced this), sent up to the Brushing Flat at the top of the mill, and brushed and cut there.

" These sheets were then sent down in trucks to the Plate Glazing room. We had 12/13 machines packed closely together in this flat. The old water wheels had been scrapped and replaced by Water Turbines of the Holyoke pattern, as the Americans were then, as now, supreme in this line.

" These plateglazing machines were mostly made locally by the Laird's earliest imported firm and were a good strong job. The tables for handling the paper were packed almost as closely as sardines in a box in front and they were served by what were called ' half timers ' in those days, who worked three days a week and went to school the other three. As may be imagined, these youngsters were a stirring lot and gave the foreman and men at the machines many a headache.

" The finish was achieved by highly glazed press boards for lightness, interspersed by Zinc Plates (very high polish) for rigidity. The result pleased our customers and we finished our papers in this way for years."

Gummed Papers

When I first ran about the mills, all our gummed paper was done by sheet, as was the coating, but the procedure was somewhat different. We used a somewhat smaller, finer and thinner " layer on brush " than for coating and did not clear off with a circular brush as this tended to froth and spoil the finish. Instead, the " layer on brush " finished the job and was applied in flat strokes over the sheet. The paper was hung up to dry on square laths, exactly as with coated papers. As the paper tended to curl badly after gumming, we broke it by running it over a standing bar twice, corner to corner, which flattened it in the same way as our mechanical breaking does to-day. The paper was then plate rolled and produced a sheet flat enough for the small sizes used in those days.

This procedure was not speedy enough for my father and he arranged, when he was making his plans for the hot air blast drying of his pasteboards, for the gumming of paper in reels by machine and also its drying by " hot air blast." He cut the floor in No. 3 Flat in our old Mill and put in a wheel running at the same speed as the paper, which was gummed in No. 3 Flat and reeled up in No. 2 Flat. This turned out gummed paper in the reel and rid us of our sheet gumming troubles. It was such a success that he installed two other similar machines. These machines were the very earliest reel gumming machines in the trade, even more advanced and efficient than our reel coating machines.

Finding these even too slow he built a special gumming house with six wheels, each of three times the drying capacity of the old one and I well remember one of our competitors telling me gloomily yet gleefully that this would ruin him. But it did not, and you have at present in Brookfield an exact replica of this gumming house.

These old gumming machines were a favourite haunt of mine as a boy. The man in charge was a natural gymnast and I used to go up to admire and, if possible, copy his methods.

On looking back to these early gumming machines, I consider that they were the nearest approach to the present day practice ever made, and a wonderful tribute to my father's vision. They had a felt feed which did not froth the same as brush feed did. He had jig and standing brushes like modern machines, no laths to return as in our old coating machines, and the modern system of hot air blast drying, although in a somewhat crude form.

It was to take charge of the increased production of these machines, that my father put down his first three bowl calenders.

For " breaking " these early gum papers, we

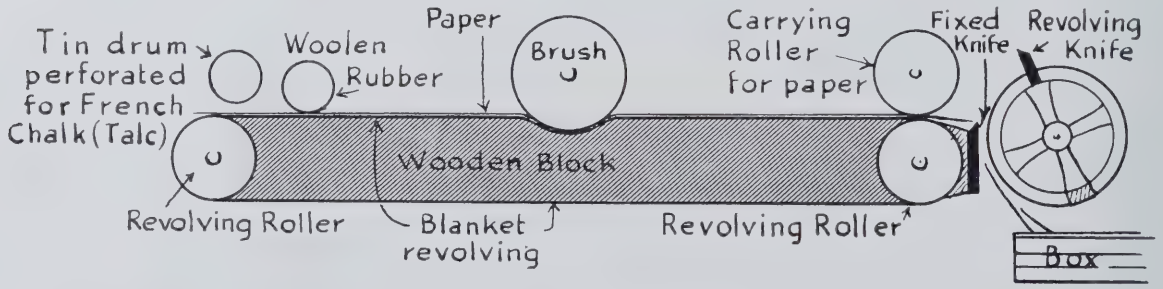

Fig. 5. OLD BRUSHING MACHINE.

Sketch shows how the paper was conveyed along a blanket which revolved around the two rollers and over a solid hardwood block. This block supported the blanket and was hollowed out beneath the brush, which pressed down hard upon it ensuring more polish to the paper. The drum containing french chalk revolved and the amount of talc could be regulated. The woollen rubber ran with paper at slightly higher speed, spreading talc over paper surface. The polishing brush ran at much higher speed, and this speed variation produced the finish. The revolving knife, broader than the width of any rolls cut, impinged on a dead knife set solidly across the machine to take the shock and the sheets dropped into the box and were laid evenly by a girl.

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produced later a system, viz.: our " XL " process, which, in my opinion, was, as regards flatness, even superior to present-day methods. We ran the paper through an embossing machine containing a linen pattern, and then calendered it afterwards on the plain side. The objection to this was the fact that it tended to make the paper somewhat thinner feeling and flabbier than present-day methods and with the very thin papers we gummed in those days, viz.: down to 12½ lbs. 18 by 23, it was sometimes difficult to avoid the linen face showing up on these thin weights. Still, it pleased our customers so much that even after present-day methods came in they were always asking for the old " XL."

" Another development which we undertook, was to evolve our first calenders (for gummed papers), much trouble having been experienced in handling the sheets. These were three-bowl calendars—one chill, one paper, and a cast iron bottom bowl. To the astonishment of the old hands, they worked. But it happened to be a hot summer, and the calenders being installed near the size-making department, flies, envisaging a free switchback ride, used to perch on the top bowl, get squashed between it and the paper bowl, thus causing the paper to stick. This meant much head-scratching until the solution was found by devising a much higher speed of travel."

Colour Problems

Regarding the availability of colours in those early days, Mr. Archibald McLaurin records these recollections:

" Well, we had very little trouble so far as I can remember. There were no aniline colours in those days, with the possible exception of Perkins' mauve. The battle of magenta had not been fought, and the name, let alone the colour, was unknown.

" We had chromes, ultramarines, umbers, ochres, and for pinks, etc., we used cochineal made from the body of the little canary insect. For greens we had arsenic green, and I well remember a huge vat of it lying open in our colour shop. It would have plunged a present-day factory inspector into convulsions, but nothing ever happened, and the folks of these days were never troubled with dermatitis or other skin diseases.

" We had to make our own glues, as we never heard of, or saw, cake glues then. We used horn piths—the inside of the horn after the button makers had used the bone for buttons. This made a good size, which we ran into earthenware troughs, and kept in louvred, shaded sheds, where the sun could not strike.

" I well remember Davie Smith, the colour mixer for the girls. An Aberdonian, he wore the square paper cap common among the older men in the trade, but being discarded by the younger men. He was the most imperturbable man I ever knew. His job was no sinecure. The coating girls being on piecework, would come down and give Davie a thorough slanging if the next job was not ready. He would carry on calmly with his work quite ignoring the presence of the protesting girl. As if he had not heard a word, all he would say when the colour was finished was: "Noo, lassie, if ye mak as guid a job of your coating as I've made o' yer colour you'll do no sae bad yet." The girls all liked and respected him, and as they could make nothing of Davie, the scolding became a routine necessary to round off a pleasant day's work.

" When the other men were stumped in getting a shade right, we had a man who had an uncanny knack of knowing just what colour to use, and the exact amount necessary. They would contact ' Jim,' and it was then all plain sailing. Folks were very particular regarding shades even in those days. Morley's buff was a headache, and, if not just right, back it came. When I first ran about the works, we had no dextrine gums. Barbary gum was the thing, and nothing but barbary would do. Gum Arabic or East African gum

At Cartside Mills to-day. On left, The Calender Room. Right, part of Colour Shop.

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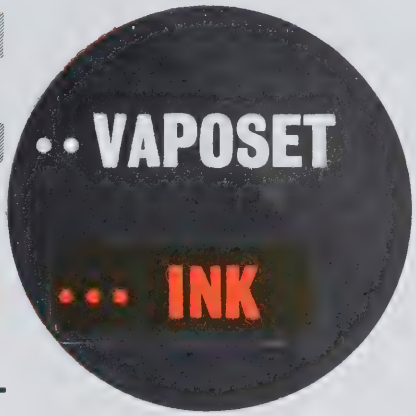

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they considered frothed and did not finish. Nowadays we never seem to hear of Barbary gum."

When Smith and McLaurin went to Millikenpark, they took with them all their pasteboard and cardboard plant from Port Dundas.

Referring to this period, Mr. Archibald McLaurin says:

" There were no reel pasting machines in those days. The paper and the middles were bought in sheets. The covering paper had to be dipped in a vat, allowed to drain for a while and then squeezed in a press slightly to expel surplus water. Otherwise it would develop creases in pasting. Flour paste was used, this being thicker than that made of starch. The address cards which were affixed to each railway waggon were white on face and olive green on the back."

Mr. Archibald McLaurin recalls that the railway authorities insisted on obtaining a certain weight per gross, and this was achieved by adding barytes to the paste.

Railway Ticket Boards

The firm also made the railway ticket boards required for passenger traffic. As uniformity of thickness was essential for the date-stamping machines, a special machine had to be devised. This consisted of two rigid rollers which squeezed the boards to a uniform caliper. For board of correct or over thickness, the appartus worked well, but thinner boards were detected by girls and removed.

Another view of the Colour shop.

Describing the pasting process, Mr. Archibald McLaurin writes:

" Our boards were pasted in sheets on machines equipped with woollen felts, top and bottom. The middles were fed by one girl at one side of the machine, paste being applied on both sides. These sheets were picked off the blanket by two girls on the other side, and handed to girls on both sides who laid middles on to the covering. The paper was ' mingled ' so that the wire side of the paper was always inside next to the middle. When a pile about 8/9 ins. high was produced, it was conveyed on the wooden board it was started on, to a special press, lightly pressed and the edges washed free of paste."

The board was then sent to the drying flat, where it was hung up in sheets in ball clips to dry.

Introduction of Hot Air Dryers

But the elder McLaurin, ever on the look-out for improvements, found this process too slow. Accordingly, he brought in " one of the Laird's importations "—a wonderfully clever engineer who had dozens of patents to his credit.

With his assistance, two fans were installed similar to those employed in blowing hot air through tanks of the present-day locomotive boiler type. These fans drove hot air into one of the old water-wheel tunnels, up to the third storey of the mill. Here were built two endless dryers, fitted with tapes for holding the sheets and other tapes for conducting them round tin drums positioned at the end of the machine. The sheets went in at the top of the machine and came out dry at the bottom.

Mr. Archibald McLaurin believes that these hot-air dryers must have been the first to be used in the paper trade.

From No. 3 floor, the sheets went down to No 1 Flat, where they were plate-glazed. Having been pasted, they then passed to the hydraulic press. There were five or six of these presses, hot plates being necessary to ensure the boards being perfectly flat.

Having these presses, the firm at that time made all their own bowls for their embossing rollers and for their first calenders.

Early Recollections

Mr. Archibald McLaurin has some interesting recollections of those early days, which he records as follows:

" Our head engineer was a man over six foot in height and thin as a lath. He was one of the strongest men I ever knew. An engineer, blacksmith and mill-wright; he was a good plumber if need be, and prided himself on being able to turn his hand to anything. In his young days he had helped at the forging of the crankshaft of the Great Eastern, and the young engineers in Johnstone used to come up to chaff ' John,' as the man who had built her. This vessel was then by far the largest ship afloat, but was somewhat of a white elephant, as her steam power was not equal to her bulk. She did one good job, however, in laying the first cable to America.

" It seems a ' far cry ' now back to John's time, but my father could go much farther back, for as a very small boy, he had shaken hands with a very old Highlander, who had taken part at the last battle fought on British soil, viz, Culloden in 1746.

" My father had very sound views on education for those days. After having imbibed as much Latin and English literature as he thought necessary, he sent my younger brother and myself to Allan Glen's Technical College, then looked on

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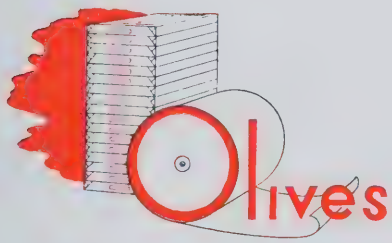

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as something very revolutionary in education. There we studied chemistry, both theoretical and practical, physics, the practical use of tools, both carpenters and engineers, and mathematics generally. Then, as Germany was now becoming the leading country in our trade, both for colours and machinery, he sent us there to study the language for one year. This we found of special value to us when later we went over to Germany to buy machinery and colours, engage men and so on.

" Thereafter, as my father was exhibiting at the first Australian Exhibition at Melbourne, my brother got a trip out there and to New Zealand, and incidentally round the world.

Colour Matching

" I went into the works to study practical colour matching in the colour shop, and thereafer the other processes.

" When I went into the colour shop, German anilines were beginning to creep in, and though they gave us many more beautiful shades, they caused us much trouble. We had, in those days, no idea of making lakes, and simply dissolved anilines, adding them to the white base. This caused much variation in shades, and trouble with customers. The aniline makers, however, introduced the methods of making lakes to the British lakemakers with a view to selling their dyes.

" The earliest chromo paper produced and sent into this country was made by Gustav Najork of Leipzig. Except that it is was made on a common looking yellowish paper, it was really good material.

The Foreman's Desk, Colour Shop.

" My father must have been the first to introduce colour matching by electric arc light. St. Enoch Station, Glasgow, was the first in the city to instal this light. My father sent in his men with colour to do some matching on the spot. The results, although not perfect, were considered much better than those by gaslight. As a consequence, he ordered a dynamo. There were no electrical engineers and electricians in those days, so this dynamo was made for us by a firm of venetian blind makers, whose Principal was of a scientific turn of mind. It was driven by a separate turbine of its own. and we lighted our colour shop and plate-glazing flat from it.

" I well remember as an apprentice colour mixer, that it was my duty on the dark winter mornings to go in and ' tickle it ' up so that we got our fair share of the light.

" When the first filament lamps came in we tried them in the plate-glazing department, but they were very inefficient compared with arc light, and took much more power.

" We were now beginning to go to Germany for our machinery. Our first calenders came from Haubold of Chemnitz. They were a pretty rough job, all belt driven, with no slow speed arrangements for feeding through, but we did some good work with them, and had in all about eight or ten.

Innovations

" Our first cylinder coating machines came from Grahl and Hoehl of Dresden, and were a good, strong job. We tried two other makers, but theirs were not so strong and steady, so we stuck to Grahl and Hoehl.

" This firm introduced us to the pneumatic suction blanket, which proved a great advantage. They also introduced turntables which brought back the laths to the coating machine lathbox, and with the reeler at the same end of the flat, the machineman was given control of all his operations. They also introduced a better brushing machine than our old methods. The principle here was that the brush, instead of running in a hollow, impinged on three rollers, which produced a better finish. Altogether we had about thirteen or fourteen of these machines.

" Our Brushing Department was above the Calender Room, and as the old cogwheel era had departed, the machines were driven by a broad, upright belt. As we gradually piled machine after machine on to this belt load, we experienced much trouble by slipping.

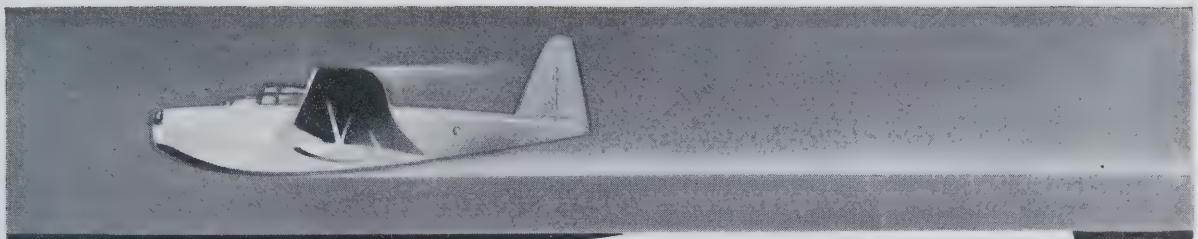
" Contacting Mr. Tullis of the Glasgow firm of beltmakers of that time, and an authority on belting, that gentleman looked at it and exclaimed ' Compound it.' ' What's that,' we said. ' Run another belt on top,' he explained. ' It will run faster than the one below,' we objected. ' Try it,' he said. We did, and it worked perfectly.

" They were wizards with belting and leather was leather then.

Coming of Electricity

" I think my father was the first in our trade to run his mill by electric power. In 1897, he built a large new addition, and as it was a considerable way from the boiler house, it was a matter of a long steampipe with condensation and returned hot water troubles owing to levels, etc.

" Electric motor engineering was then in its infancy. It seemed so promising, however, that my father took a gamble, and got in touch with



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Mather and Platt of Manchester, a choice he could not have bettered. Dr. Hopkinson, their expert, was an authority on the subject in those days, and as copper was then cheap, they did not spare it for commutators. We have still some of these old motors doing yeoman service.

"One, in particular, served us well and was practically sparkless. It was situated in a flat which Government inspectors thought might have inflammable vapours. They, therefore, instructed us to protect our filament lamps with thick glass covers. After frequent surprise visits, however, they could detect no sparking and allowed us to work this motor without any special protection.

"A.C. current was not then in existence for commercial use, so we took D.C., which involved much less complication. This plant was so successful that we gradually ran the whole mill in this way."

American Connection

Mr. Archibald McLaurin was associated with the early development of the American trade which led up to his firm opening mills of their own in the United States.

"At the outset," he writes, "we did a good trade with the U.S.A. in gum papers, through agents, and I well remember my early visits to the States and journeys with our representatives to stimulate new trade. Dextrine gums were unknown in the U.S.A. then. Fish glue with sassafras to kill the odour was the practice, and I could always detect the proximity of a prospective new buyer by the sassafras odour escaping through doors and windows into the streets.

"I never got further west than Chicago. San Francisco, Los Angeles and the Middle West, were then a *terra incognita* to these Eastern agents. Successive tariffs killed our import trade, so we determined to establish a plant in the country, now McLaurin-Jones Co., in Brookfield and Ware, Mass. My brother, Duncan, a trained engineer, went to America, bought the ground and plant at Brookfield, and installed the machinery. My brothers, William and John, went over to run it, and liked the country and people so well that they determined to settle down there. I don't think they ever regretted it, for they assimilated the American style of doing things very quickly and very thoroughly."

The prominent position which the McLaurin-Jones Co. occupies on the other side is indicated by the fact that Mr. Fred. Farrell, who was the first chemist with Ideal Coated Paper Co., now McLaurin-Jones has been elected president of the Paper Gumming Section of T.A.P.P.I. in the States this year.

● MAKING A FIRE-RESISTING CASE

Continued from page 270

called the lid and the lower the base. These two portions now require to be filled in at the ends. Note which is the dividing line so there is no confusion, for the wrong edge can easily be filled in by mistake and the fit may not be quite perfect. With the same material as was used for the original lining, line the already cut filler, leaving the lining a full quarter of an inch beyond the filler. This projection must be well glued and the lined filler filled into the head of the lid and the tail of the base, the glued edge of the projecting lining made to adhere securely to the inner and outer edges of the two ends. Then the second piece of millboard made about $\frac{1}{8}$ in. larger than the outside, fixed very securely to the inner one and allowed to dry thoroughly under pressure. The projecting edges of millboard and lining can then be trimmed off smoothly, any burs, made by cutting, removed and the case is completely ready for covering. This method is the tested London method of moulding these cases. I have, however, heard of the method of closing in the head and tail as weak in principle, for it is claimed this filling could burst out under explosion of steam. The alternative method is to make the block exactly the right size head and tail and mould the tail of the inner case as the sides are being done, and the head of the lid when the outer case is being built up. This is achieved by cutting the moulding paper large enough to cover sides and ends and turning the ends down when each new layer is added to the side. Whether this method will withstand a more severe test than the previous one, remains to be proven. There now remains a few points to be made on the covering. Although lid and base are in two pieces, for the uniform appearance of the side, the cover should be cut out in one piece, divided afterwards and the two divided edges contacting in the final covering. The covering join should be on the fore-edge and be about 1/32 in. from the edge. The head and tail turned over from the side about $\frac{1}{4}$ in. with spliced panels laid on afterwards. The turn-in of lid and base require very special consideration. The paring of the turn-in must not go one tiny fraction beyond the edge, otherwise there will be a most unpleasant dip where it is least desired when the lid and base contact.

The paring then must be abrupt and very fine. A little judicious sanding is necessary on the inside but only equal to the consolidated turn in. The lid will be such a perfect fit that there will be no room for the turn without the removal of its equivalent. A fine blind line round the panels of head, tail and fore-edge will hide the joins and a little gold finishing will, as always, add further charm to a charming job. It now remains to fix the inner mould below the neck (with glue that will not ooze out) into the base and share with Mr. Zaehnsdorf the confidence in a job well done.

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A Century's Progress in a Graphic Industry

Notes on a visit to the Amsterdam Type Foundry

IN one of the stylish antechambers of the "Amsterdam" Type Foundry, is a watercolour hanging in a sober frame (above). It represents a double-fronted house along one of the Amsterdam canals and the plain house of this picture is the original "Amsterdam" Type Foundry. Nobody would recognise from this 40 to 50 years old picture the impressive plant of to-day. Then it was not a concern of world wide reputation, making deliveries throughout the Continent and was not yet by half so many-sided in its field. But since the old days of this watercolour picture the Type Foundry has developed enormously and its high, large buildings are now dominating the Bilderdijkstraat and its backwater, overlooking all neighbouring houses.

Over three hundred people are now working in the A.T.F. and the company has some two hundred thousand kilos of type in stock, ready for despatch. More than six hundred thousand matrices are in the stores, the better half of which make their regular round along the plant. The single automatic type casting machine has a capacity of six thousand per hour and in the big casting hall, we find very many such machines in full operation.

The visitor starts his tour in the well-furnished type stores and before he finishes in the dignified, solemn library—a creation of a famous Dutch architect—he has passed through some twenty different departments. The type factory is extensive and very well equipped, but the finished type is not produced without some worries. It originates from the brains of the designer, the most important man when a new letter is to be born or a new series to be put into production. He is ever active; even when quite satisfied with his design, he has to pay full attention to the further processes thus securing its correct aesthetic quality. We may see him in the foundry itself, where his types are finally cast in endless series, his trained eyes on the outlook for the slightest imperfection. Here, incidentally, it is opportune to pay tribute to S. H. de Roos, whose work for A.T.F. in letter design is world renowned and whose seventieth birthday was celebrated on September 14th, 1947. De Roos has done an incredible amount to improve the standard of typography in Holland and in honour of his birthday an issue of *Lettergieterij Amsterdam* was dedicated specifically to his work showing samples of De Roos Roman and De Roos Script, two brand new type founts.

To resume, after the sketch of the newly designed letter is finished, an enlarged copper pattern is made thereof. This is next transferred to the pantograph, an ingeniously built apparatus. On its one end it traces with its feeler pin the raised pattern, transferring to the other end of the instrument at a reduced scale, the precise form of the letter pattern, where it is engraved into the smooth surface of a special metal alloy. The designer is now able to judge the effect of his letter, seeing it in a much smaller size, sometimes as small as a six point body size and it generally needs a lot of hand finishing. The original gives a positive face from which the negative matrix, serving as a mould for the casting of types, has to be made.

This is effected by immersing the original in a galvanic nickel bath, where it remains as long as two or three weeks, until a nickel shell of sufficient thickness has grown. After this shell is removed, zinc is poured around it as a backing metal and the matrix is given its final adjustment. Now the matrix is actually ready to perform its function in the casting machine.

The draughting-room and the engraving department are, though important and busy, not very lively divisions, but the large casting hall, with its

Studio

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stirring and whirring of levers and wheels, the roaring of busy machines pressing the matrices against the casting mouthpieces and forcing hot metal into the openings of the moulds, represents the heart of the whole factory.

The type casting machine is not so big, not so ingeniously built as the composing machine and perhaps less spectacular than the printing press, but nevertheless it is a faithful worker and the types leave it in a continuous stream. In producing the larger sizes, working slowly and deliberately, but more quickly in the smaller body sizes the casting machine gives birth to the types, pushing them hurriedly in an endless row on to the wooden rulers whereon they are collected.

After the type has left the casting machine, it is carefully tested again for accurate dimensions, of which of course not the fraction of a point may be missing.

The next operation is to collect the types in the stock room, according to so called special fount schemes, i.e. the types are sorted out in a certain proportion, which is different for each language. It is a matter of course that the A.T.F. distributing its products into so many countries, has a lot of fount schemes on record and the collecting and arranging of the types is a very instructive and interesting job. Over six hundred thousand matrices are stored in a specially built strong room, nine thousand Chinese type series and—in consequence of the Type Foundry's deliveries to the Netherland East Indies—the matrices of many Asiatic scripts, by which you can express languages never heard of before.

Other Departments

Besides types of lead alloy, tin and antimony, the Type Foundry is also manufacturing many other products for the graphic industry. In the first place there is the brass rule department, where brass rules shining like gold, pass through a bevelling machine, thus getting the required face and where other machines cut the lines to the desired length. The dotted line is made on a work-bench, with a small cogged steel wheel running over the edge of the line, leaving its traces in the softer brass.

Another division is that of the large lettered wooden type, cut in a special kind of hard-wood and used for printing posters, etc. Here we meet again the pantograph, modelling a wooden letter according to its pattern on the other end of the machine, while its finishing touch is given by hand.

Also a department of interest is that of the manufacture of furniture for the composing room. The A.T.F. has an extensive cabinet-making shop and you can see there how quick hands put together type-cases, how dustproof cabinets, etc., are made.

Quite a different establishment is the quiet laboratory on one of the top floors, spacious and bright, where all raw materials are continuously tested under the supervision of skilled chemists. In an adjoining room the chemicals for the offset deep-etch process and other photo-mechanical needs are prepared according to ingenious prescriptions, obtained by long experience. The photo-mechanical processes concerned are tested and demonstrated in a special department for the photo-engraving and reproduction techniques, where the most up to date cameras and other apparatus are to be seen.

Of less recent development is the electrotype and stereotype plant. Copper and nickel blocks have much more endurance than stereotypes of lead and that is why many printing offices prefer copper or nickel blocks, made here in the galvanic bath.

For proof-printing and testing, the Type Foundry has a complete printing office, equipped with a large two-revolution press, a modern stop-cylinder press with chain-delivery and two fast automatic platen presses. An up-to-date heavy cylinder proof press deserves special mention, being the obvious press for the printing of half-tone blocks.

On the first floor we find the roller foundry, where thousands and thousands of rollers in all sizes are cast. Peeled off composition of our own origin is boiled so that it can be used again, but it is a tradition of this roller-foundry never to use composition of foreign manufacture which one

A view of the Matrix Engraving Department.

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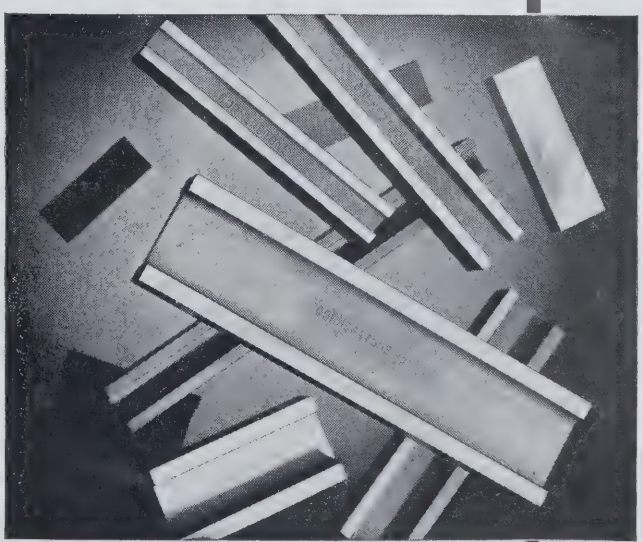

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does not know the structure. In high, round cauldrons fitted with tubes like the boiler of a locomotive, the new rollers are cast from a composition of mainly gelatine and glycerine.

Equipment, Engineering and Repairs

Besides dealing in its own self made products, the sale of imported graphic equipment is of first-rate importance to the A.T.F. As a result of its wide-spread relations, not least by its subsidiary-companies throughout the world, the "Amsterdam" Type Foundry is representing the most prominent machine factories in the graphic field. A very big showroom, which takes up the best part of the ground floor of the building in Bilderdijkstraat, gives room for displaying a fine selection of composing machines, letterpress, offset and gravure presses, various auxiliary machines and apparatus, machines for bindery plants, cardboard factories and photo-engravers; in short, all kinds of machinery for use in the graphic industry.

It is only natural, that the A.T.F. with its extensive trade in machines, must have a large staff of skilled engineers and must be able to offer the necessary service for any kind of graphic machinery. Here again the A.T.F. has well furnished stores for machine accessories, holding tens of thousands of the most divergent pieces of fittings and spare parts.

However, the most striking part for the casual visitor is the up to date mechanical workshop with a large number of lathes, planing, routing, grinding and drilling machines, where practically all repair and rebuilding jobs for the graphic industry can be carried out. Complete offset presses, two-revolution presses, automatic platen presses, folding machines, etc., are taken in hand thoroughly and competently in these workshops. After dismounting the first thing is to clean carefully, polish and paint all parts of the machine before the proper repair operations begin. Each part showing the slightest wear and tear is examined thoroughly, so that after mounting, the machine is again as good as new in every respect and it is not delivered before everything is found to be in perfect working order.

The spacious erecting hall has room for a large number of machines to be overhauled simultaneously, so that one gets the strong impression of being within the walls of a complete machine factory.

A sub-department of the engineering workshop is the paperknife grindery, where paperknives from all parts of the foundry arrive regularly, to undergo a competent treatment.

Finally, the visitor is shown into the beautiful and stately library with its treasure of rare books, a collection of typography unique in Europe. Here 10,000 books may reveal to him an evolution, to which aesthetic perfection and beauty the "Amsterdam" Type Foundry has contributed such a great deal during the last hundred years!

On left:
A part of the large Type Casting Hall.

Below:
A specimen of "Rondo" with a portrait of S. H. de Ross, the designer.

DE ROOS ROMAN AND ITALIC

Sjoerd H. de Roos is the pioneer of the contemporary art of the book in the Netherlands. He was born seventy years ago.

Sjoerd H. de Roos is the pioneer of the contemporary art of the

Paper

A superb example of Papier Mache Cabinet work (about 1860) in the Royal Scottish Museum, Edinburgh. By courtesy of the Director.

Such exquisite design, colouring and finish that one is surprised to find that this Cabinet is produced in papier mache.

Invented in the early 18th century in France, papier mache is made from the mashed pulp of waste paper and was ingenuously used for making articles such as snuff boxes and caskets. Henry Clay, in 1772, invented a heat-resisting material that made it possible to lacquer the papier mache articles, thereby increasing their strength and enhancing their appearance. This also enabled larger articles to be made—tea trays, decorative panels for carriages and even furniture. The Industry flourished for over a century, then gradually died out owing to the change in public taste. To-day, only keen collectors are appreciative of the beauty and historical interest of papier mache work. Keen printers are just as appreciative of the printing qualities of WESTFIELD Tested PAPERS—Papers with a superb-quality printing surface.

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STUDENTS' CIRCLE

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IT has, for a long time, been apparent to us that, among our readers are numbered those who, still in their apprenticeship, seek every opportunity to equip themselves to hold positions of responsibility in the future. It is our desire to render all possible assistance to those, irrespective of age, who may be in need of it, and with this issue, therefore, we inaugurate the

STUDENTS' CIRCLE

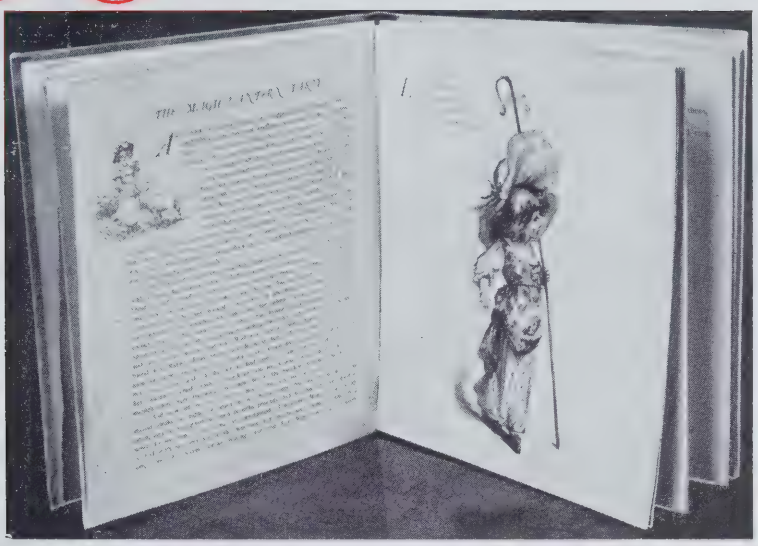
With each issue there will be printed on this page a brief article on some aspect of the business which it is hoped may prove to be of practical assistance and may serve to stimulate the reader with a desire to pursue his studies. In the beginning these will be based upon deductions made from our correspondence and from general observation but we do not doubt that, with the assistance of others, we shall be able to deal also with subjects which may prove to be of wide general appeal. We should be very glad to have an expression of opinion on the new feature from those in managerial positions, from teachers of printing and indeed from all who are responsible for the training of the craftsman of the future.

If we can know the difficulties they are encountering and, in particular, if we can learn what subjects they would most like to see dealt with by the Students' Circle we can help to make this new series of greater value to them and, indeed, it is hoped, to the trade as a whole. But the articles themselves will be regarded as only part of the work Students' Circle will embrace. They will serve as a regularly recurring introduction to the main purpose of Students' Circle, which is to give help and encouragement to students and apprentices and to supply them with information which may not be readily to hand. This service is designed to be of particular use to those who may be working for A.A., City and Guilds or other examinations. It will, so far as is possible, supply up-to-the-minute information about any question concerning paper and print and it will do so without delay, for answers will be sent direct to the enquirer by post. If the subject matter of your letter is, in the opinion of the Editor, of enough interest and likely to be of help to others, it will be printed, together with our reply, in a forthcoming issue of *Paper and Print*. Address: Students' Circle, *Paper and Print*, 329, High Holborn, London, W.C.1.

LET this be regarded as an introductory note, touching lightly upon the craft of printing and some characteristics of printers with a few historical asides and one or two suggestions for the consideration of the newcomer to the printer's composing room. One of the first things that strikes the observant entrant to the printing trade is that its practitioners do not lightly consider leaving it in favour of any other pursuit. Every printing office has among its employees a number who, though now perhaps of advancing years, retain for their trade many of the enthusiasms they experienced in their days of apprenticeship. During the war years no body of retired craftsmen responded with greater zest to the call for service made necessary by the absence of the younger men. But it is not alone in periods of national stress that the old printer reveals where his affections lie: it has always been so. Within living memory he worked very long hours for what to-day would be regarded as a totally inadequate reward. Yet he had status and by judicious use of his pitifully small amount of leisure he maintained and enhanced it. Apart from their daily toil, members of the printing trade have served the community well and they continue to do so. Join any club or institution which is doing useful social work and, likely as not, you will have pointed out to you some quiet, dependable committee man who gets things done. Irrespective of any social attainments they may possess, printers are frequently pressed into service because of their professional knowledge, their habits of accuracy and their extensive acquaintance with sources of information.

The printer, then, is a man who loves his trade so much that he is loth to leave it. Not everyone who enters the trade, of course. Some, not content with translating words of others into terms of paper and ink, decide to write their own: Mark Twain is an example, and there have been many

1895



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"The Magic Toy Book," illustrated above, was published in 1895. It is one of many novelty books of that period and includes some excellent coloured sketches of children in period costume. On several pages are incomplete sketches which become completed when the pages are held to the light. As delightful a gift for the child of the "Nineties" as any of the splendid children's books now being so well produced by many printers — printers who insist on using such good-quality paper as Bruce's Featherweight.

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printers who have made their mark in literature as in other fields of scholarship. However much he may appear to stray, the man who decides to leave his work at the printing office usually enters a business or profession which is closely associated or even allied to it and, almost inevitably, some part of his time will be spent in the surroundings where, because of earlier associations, he feels at home.

A Worthy Craft

What is it that makes men so loyal to the printer's craft even when they are no longer actively engaged in it? Why is it that there is never a shortage of recruits? The young man who has recently entered a printing office should ask himself these questions, for the right answers to them will determine his whole attitude to his future vocation. They will go far to help him feel that in selecting printing as a means of livelihood he has entered a worthy calling and one which, despite trials, vexations and disappointments, offers great compensations and content. It was not always so. There was a time when printers were regarded with acute disfavour. Those workmen who, in the view of the then authorities, abused their trust by printing books and pamphlets containing heterodox opinions suffered not merely the loss of their business but in some cases mutilation and even death. They had a hard time and were generally reviled. Ben Jonson wrote to his patron:—

> "It is the lewde Printers fault that I send your lordship no more of my Booke done. . . . My Printer and I shall afford subject enough for a Tragi-Comedy, for with his delayes and vexation I am become almost blind."

Printers' mistakes have been the subject of mirth for centuries. The misprints in a work printed in 1561 were so numerous as to warrant the printing of fifteen pages of errata. It was then apologetically explained that the devil had had a hand in the operation and, as is well known, the devil persisted in his evil courses down to our day: no printing office is complete without one. The printing trade is very conservative.

Type

Its history is fascinating and there is much research into it still to be done. No one knows where movable types were first cut. Some claim Haarlem, in Holland, as the birthplace of the invention and certainly experiments were made in France—at Avignon—but since the earliest specimens of actual work printed from movable types seem to be those of Gutenberg, the general opinion is that Germany saw the birth of the art.

Handwriting is, of course, the forerunner of printing, and the livelihood of the first printers depended upon their ability to produce imitations of the manuscript books then in circulation. So Gothic type was cut. Except in Germany, Holland and England Gothic type had a short life. Caxton used it and so did his successors until 1572, when John Day introduced a series of Roman types. Unlike those of the Low Countries, scribes of the Latin countries generally used the Roman letter and thus it came about that beautiful alphabets based upon that letter were first cut in Italy and in France. Some of these you will use and it is well to remember that their names, which may seem a little unusual to you, have not been arbitrarily chosen or are without meaning but that they form part of the history of your craft. In France the work of a painter, artist and scholar completely removed the use of the black letter from the work of the French printers. That was Geofrey Tory, a name you will certainly encounter at some time or other in any office where fine printing is produced. Then there is Jenson, a Venetian printer who gave to the world a beautiful letter which is still an inspiration to designers. Among many others, Baskerville, Bodoni and, to come to more recent days, Gill and Goudy, are names in everyday use by the printer and his customer. Remember them, not as the designation for founts of cold type, but as the names of men who lived enthusiastically, who so diligently practised the art of printing that through their contributions to it their names live, as they will continue to live, so long as we print at all.

Mechanisation

You will almost certainly encounter someone or other who will deplore the passing of the craft and the mechanisation of the modern printing establishment. Don't let it depress you or weigh too heavily with you. Printing has always been mechanical. The whole purpose of printing quite from the outset was the mass production of MSS. The first printer was a mass producer; we have simply elaborated his process. His mechanically-produced types were set by hand; ours are more accurate and are largely set by machine. Hand composition is still required, however, and it will continue to be. The method of hand composition to-day is not vastly dissimilar from that practised by Caxton—indeed, if Caxton came back, having been given a short time to learn the plan of the Gothic cases and to get "the run of the shop" he could probably carry on with straight setting. But his work would look different. A book printed by Caxton would have the words set very closely together and it would bear no title page, have no Roman or italic type and no commas of ordinary shape. But the essential difference between the composing room of the FATHER OF ENGLISH PRINTING and that in which you find yourself to-day is that whereas in Caxton's time there were strictly no founts, the compositor of to-day has a bewildering variety of type founts at his disposal. In recent years the founders and the manufacturers of type composing machines have

Continued on page 306

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DEVELOPMENTS IN COLOUR REPRODUCTION

by

H. M. CARTWRIGHT

F. R. P. S

COLOUR printing takes many different forms at the present day, and includes such methods as colour-line, lithography, and silk-screen processes in addition to those based entirely on colour photography. Readers will have noticed especially the extent to which lithography is being used for book illustration, and that very often it is printed from plates drawn by the artist himself. No doubt this revival of auto-lithography is partly due to the desire of publishers to preserve something of the fresh spontaneous character of the artist's work, but it has also been made necessary by the present shortage and the enforced use of cheap papers largely composed of wood-pulp. We must also remember that much effective work can be produced by two-colour printing on a photographic basis, and the possibilities of this method have by no means been fully explored.

These various methods all have their place, but in this article we propose to consider developments in processes based on tri-chromatic photography. They are of great importance for reproducing artists' colour originals of all kinds as well as colour photographs, including colour transparencies. Such processes are also used for producing a photographic representation of the living model or of sets built up in the studio. Much work of this kind is being produced for illustrated catalogues to help our export trade, and many firms are preparing for a considerable increase in the volume of the work which is confidently expected in the future.

Tri-colour Principles

Most processes of colour reproduction having a photographic basis depend on the fact that nearly all colours can be matched by an additive mixture of selected wave-bands of red, green and blue light, or by a subtractive mixture of yellow, magenta and blue-green pigments.

The first principle is described as "additive" because the various colour sensations are produced by the addition of coloured light rays. It forms the basis of the mosaic screen-plate process for making colour transparencies, such as Dufay-chromex, in which very small juxtaposed red, green and blue colour-filters form an integral part of the material between the support and the emulsion. The colour mixture is effected in the eye of the beholder.

In the "subtractive" processes for making prints on paper, blue, green and red filters are used for making the negatives, but the print is made by superimposing layers of yellow, magenta and blue-green pigments.

The effects produced by mixing pigments are a matter of everyday experience and can easily be appreciated, but it is not always realised that the range of colours that can be matched in this way is limited. Many of the more common colours occurring in nature can be matched quite well, but there is a wide range of bright colours, especially amongst some of the modern dyes, which cannot be imitated by any tri-chromatic mixture of pigments.

Inherent Limitations

While thinking of printing on a tri-chromatic basis, we may recall that the processes have certain limitations. In the first place, the range of tones that can be printed is limited at one end of the scale by the whiteness of the unprinted paper, and at the other end by the maximum strength of colour or black that the inks will give. The greatest possible range of tone is about 50 to 1, whereas the range of contrast in a landscape scene, a studio set, or a colour transparency may be of the order of 100 to 1 or even 1,000 to 1. We can never hope, therefore, to secure the brilliance of a brightly lighted studio set or of a Kodachrome transparency. Another point is the fact that the tri-chromatic mixture will only render a limited range of colours. It is very helpful to have available a chart showing the full range of colours that a particular set of inks will produce. Colours such as bright green or purple which lie outside the range, cannot be matched, and we must be content with an approximation, unless one or more additional printings are made with specially selected inks.

It must also be remembered that the purity of the inks used in letterpress and litho printing is somewhat degraded by the colour of the linseed oil varnish. This effect is less noticeable in photogravure, where a fairly colourless medium is used to bind the ink to the paper.

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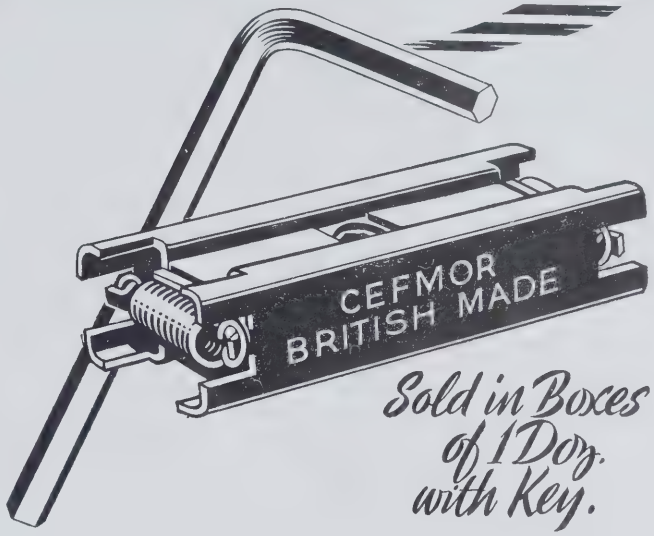

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What is more serious is the fact that even the best available inks do not have the theoretically ideal spectral composition; the colours tend to be yellow, red and blue, rather than yellow, magenta and blue-green. This in itself limits the range of colours that can be produced, and it also means that some form of "colour correction" technique has to be introduced into the process. For the most part this involves a local reduction of the strength of one or two of the component printings. Greens and blues, for instance, tend to be degraded and greyed because the "magenta" ink does not reflect enough blue light and the "blue-green" ink is deficient in both blue and green. We correct this partly by reducing the strength of the "magenta" (better described as "red") printing over the required areas.

There have been improvements in tri-colour inks in recent years, and possibly further advances will be made in the future, but experience so far has shown that the pigments which approach more nearly to the ideal are not sufficiently permanent for practical printing. Some people hold the view that the search for inks with more suitable spectral characteristics may ultimately lead us into new and unwelcome difficulties, and it must be admitted that with purer and brighter hues it is more necessary to preserve an exact balance of colour in the three printings, otherwise the results tend to be crude and "cheap." One of the reasons for adding the fourth "black" printing in most of our colour printing is that it tends to disguise slight variations in balance which are sure to occur during the run on the machine.

Recent Developments

Much of the research work that has been undertaken just before, during, and since, the war has been directed towards overcoming the difficulties of hand "colour correction" referred to above. The old idea of photographic "masking" has been revived and put on a scientific basis. By way of illustration we may think of a blue sky which would be spoilt in the reproduction because too much "magenta" (red) would be printed on it. We can mask the green filter negative (magenta printer) with a positive image to add to its density in the sky area without interfering with other parts of the picture where perhaps the rendering is satisfactory. The problem is complicated by the fact that the blue filter negative (yellow printer) will probably also need masking. The subject lends itself to mathematical treatment, and it can be shown that substantial (though not complete) correction can be made in this way, but it is not so easy to apply the idea in practice. Masking is very helpful in certain cases, such as the reproduction of carpets where the pattern is detailed and intricate, but in most subjects additional hand retouching is required.

Many other advances have been made in technical details, such as the use of integrating exposure meters for controlling exposures in negative making, and photometers for measuring the density of negatives and positives. Very great improvements have been made in the production of photographic plates having increased red sensitivity, though it may be noted that the spectral sensitivity of plates differs from that of the human eye, which has a maximum in the green region. As a result of this certain green colours do not photograph with the full value that would be expected from their visual appearance, and this is another reason why colour correction is so necessary.

Infra-red photography is sometimes used for making the negative for the "black" printing plate, and there are other special techniques which make use of the property of fluorescence. For the most part these are matters of primary concern to the photo-engraver who adopts the technique best suited to the character of the work he handles.

Choice of Process

A remarkable feature about present-day colour reproduction is the strong position held by photo-lithography. Steady technical development was going on before the war, and it has been continued since, so that colour work of distinction can be printed now on cheap papers which are quite unsuitable for letterpress printing from colour half-tone blocks. This is largely due to the almost universal use of the "deep-etch" process accompanied by technical improvements on both the photographic and the plate-making side. Active research is now in progress with various forms of bi-metal processes which are likely to provide more durable plates, and a simpler and more reliable printing technique. Some remarkable colour photo-litho is being produced in the United States of America; the work has all the quality of good half-tone, but it is surprising to see that much of it is being printed on coated paper, which tends to discount one of the chief features of lithographic printing.

The extent to which photo-litho will be used in the future is tied up with the question of type reproduction. The usual method of photographing good type proofs is relatively costly and inconvenient, and cannot give such good results as letterpress direct from the type or stereo. Several minds are at work on the problem of photographic type composing, and in the development of machines for this work we may expect to see incidental improvements such as better word and letter spacing. Work is also proceeding along other lines such as the use of type pulls on transparent plastics. As a result of these advances we may expect to see photo-litho used extensively for a wide range of book and magazine printing, at any rate for monochrome work.

Colour Lithography

The position with regard to colour is not so simple. We have already noted the tendency to revert to hand-drawn chromo-litho in some instances, but we are concerned here with photo-lithography, and more especially with the production of satisfactory publicity matter in colour which, after all, is the determining factor in much commercial work. It must be remembered that five or more printings are still used for the best colour work, the additional pink, light-blue, etc., being more or less necessary to ensure a complete scale of gradation and to

improve the quality of the work. It is true that some firms are obtaining pleasing results with only four printings, but considerable improvements in technique will have to be made before this becomes established practice.

There is, however, another aspect which deserves careful attention. It is associated with the question of colour correction, to which we have already referred. It is well known that in half-tone for letterpress printing, tonal and colour corrections are made by " fine-etching." It is still required, even though a " masking " technique is used. The etcher controls the size of the dots which go to form the printing surface, and he becomes so skilled at this that he knows almost instinctively what size of dot is required in each printing plate to produce a particular tone or colour, and his judgment is seldom at fault.

It is quite true that the photo-litho retoucher has a parallel system of " dot-etching," but it is used to correct the screen-negatives or positives and not the printing plate. The result is that little or no alteration can be made after the plates have been printed-down and proved, except by going back to the negatives and positives, in which case much of the work has to be done over again. This is a most serious drawback because it adds considerably to the difficulty and expense of securing a satisfactory colour rendering in the first instance, and of making any subsequent alterations that may be required.

Colour Half-tone

It is our considered opinion that colour half-tone should always be used, in cases where the work can be printed on coated paper, if exact colour reproduction is required. By exact reproduction we mean either "facsimile" (in the case of pictures) or an interpretation to meet the needs of the artist, agent or publisher. In either case we must be able to modify the colour result to make it " right," and as we have seen, this can be done much better when the process of colour-correction forms the last of a series of operations, and when it can be carried out by a method such as fine-etching, which allows of such complete control. The technique of colour half-tone is already highly developed, and subject to scientific control, but the future of the process will depend on there being a sufficient number of skilled fine-etchers to meet the requirements of the industry.

Photogravure

In some respects photogravure is the most satisfactory of all processes for colour reproduction, but this is true only when it is worked under the best possible conditions and with a highly skilled technical staff. The ink impression has almost a continuous-tone character, it can be printed with success on relatively cheap paper at a high speed, and the drying time between successive colour impressions has been reduced to negligible proportions. In addition, work of the highest quality can be produced in only three printings that has a purity of colour and range of tone unequalled by the other processes.

Unfortunately the technique is exceptionally difficult, and again we are faced with the problem that colour corrections have to be made at an early stage of the process—on the negatives and positives rather than on the finished cylinder. It is true that it is always possible to roll-up etched cylinders with ink on the surface and then re-etch to alter the depth of the work, but it is not possible to gauge the depth of the work in the same way that the surface area of dots can be estimated in half-tone. On these grounds, although the process is entirely suitable for the highest forms of colour reproduction, it is far less satisfactory for commercial work in which exact colour rendering is wanted at a relatively low cost.

The tendency in recent years has been to make cylinders by the screen positive technique, rather than by variable-depth etching from continuous-tone positives. This idea will be developed still further in the next few years, but the fundamental difficulty of accurately controlled colour correction will still remain. The process is very largely used for weekly and monthly magazine printing, and this trend has been much assisted by the design of five-unit web machines with " enclosed " ink ducts for printing three colours and black on one side of the paper and black on the back. Unfortunately, the problem of register in web printing is not yet completely solved, and this is an additional reason for being sceptical about the more extended use of photogravure.

Collotype and Silk-screen

Most of the more expensive " facsimile " reproductions of artist's paintings have been made by collotype in the past, usually by a laborious combination of photography and hand work, the picture being built up in numerous successive printings in the traditional chromolitho style. It now seems likely that the technique for making plates for rotary printing will in time become an established method for some forms of commercial printing. Fine screen-negatives will be used, and the dot-etching technique will be required for colour-correction. No doubt a synthetic compound will in time replace gelatin, and the plates will be more durable and reliable. Much leeway has to be made up with this process, however, and its full commercial development may take some time.

Rapid progress is being made with silk-screen processes; new forms of stencil are being invented, and machines for rapid printing are being designed. Tri-colour work has already been produced experimentally, but the important feature of the process is that it produces work with a distinctive character that no other method of printing will give. The process is likely to occupy an important position for printing editions outside the range of hand-printing, but which could not be economically produced by established methods of machine printing.

Originals for Colour Reproduction

All forms of artists' paintings can be reproduced, but for commercial work, water-colour drawings are to be preferred. Some artists favour poster colours, and they are acceptable although they are a little more difficult to reproduce, but a mixture of techniques should be avoided if

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possible. We consider that subject to this proviso, the artist should have complete freedom to use his own technique without restraint, though perhaps he would do well to avoid the exceptional and bright colours which lie outside the range of the tri-chromatic processes.

Colour photographs made by carbon, carbro or a similar process make good originals, with or without the addition of lettering or other artists' work. Colour photographers are now specialising in this work, and in many cases they are using one-exposure cameras for making the colour separation negatives. It may be pointed out that if circumstances permit it is often better to reproduce directly from the negatives rather than from the print, which is then only used for visualisation and as a colour guide for the colour etcher. The production of colour photographs has reached a very high level in the United States, but much higher prices are paid for good originals than in this country.

Colour transparencies are likely to be used for a wide variety of colour work in the future. Those made by the "subtractive" method (Kodachrome, Ansco, etc.) are remarkable for their good definition and freedom from grain, but tend to have too great a contrast range, which at present is often corrected by "masking." Transparencies made by the "additive" process (such as Dufay) have an acceptable range, and are sometimes preferred when an accurate rendering of subtle colours is wanted. The screen mosaic causes some difficulty in enlarged or same-size work, and it is preferable to reduce down from large films when they are available.

Finally, reference may be made to the technique of producing originals by means of special pigments which contain materials that fluoresce when lighted by the ultra-violet light used in photographing them. In this way it is possible to compensate in some degree for the changes in colour value which occur in the process of reproduction. Such a technique may be unsuitable for general application, but it may well be of value to a firm of printers or engravers preparing its own originals for reproduction.

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● STUDENTS' CIRCLE

Continued from page 296

issued many new faces which, often enough, bear so close a resemblance to those already in existence as to require an expert to distinguish between them. This wealth of material makes your task of learning rather more difficult but it also gives splendid opportunities for producing everyday typographical masterpieces if only we will learn how to use it correctly and with good taste. It is not alone the tools of the trade we must learn to use. The printer has a language of his own; we must become familiar with it. His actions are often governed by customs of great antiquity; we must learn to respect them. It takes years to make a printer and it is but natural that the man who has given a large part of his life in learning how to become one should be a little impatient of those who would know it all in a week or two and still more of those who without actual experience yet would teach him how to handle type. All the same the good printer is unusually responsive to those who recognise him as a craftsman. Certainly no apprentice to the trade should ever feel that his seniors are anything but glad to encourage the enthusiastic learner.

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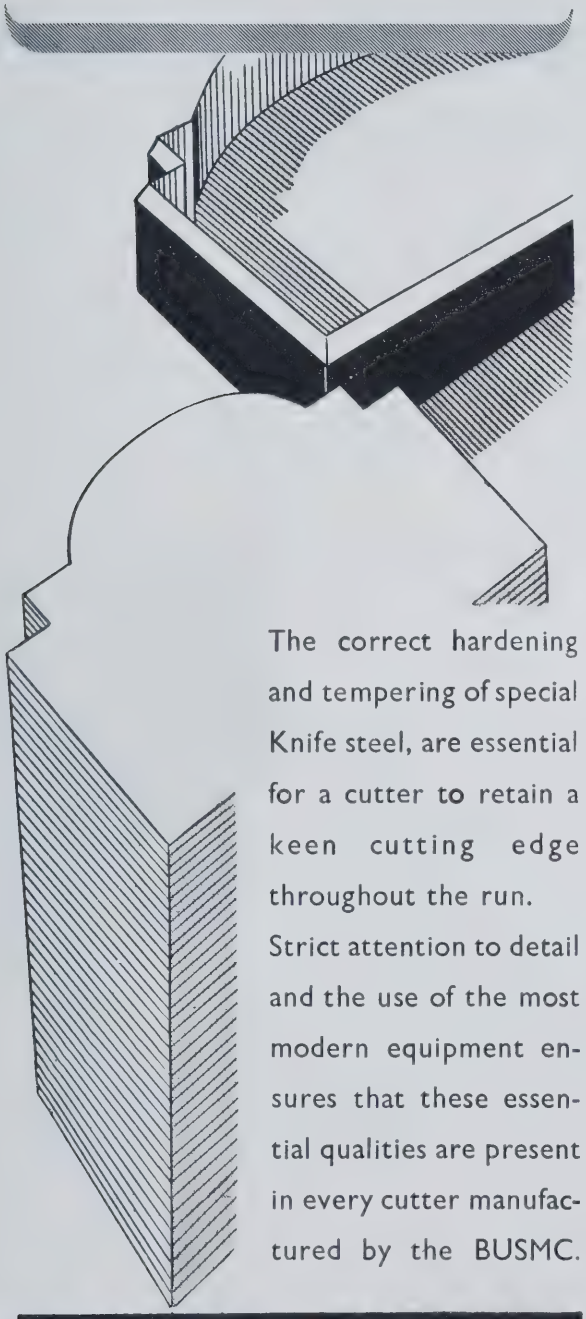

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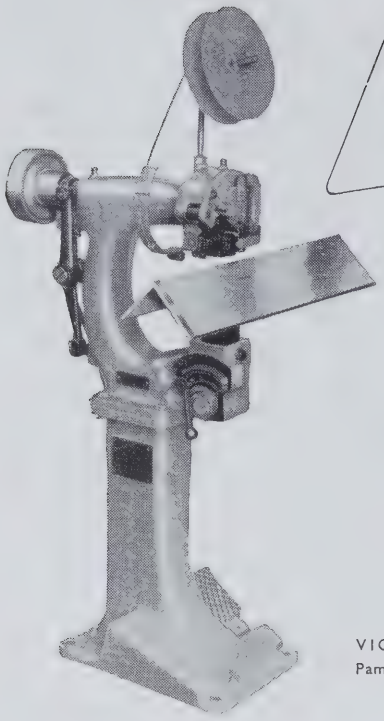

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Speed and certainty of operation are two essential qualities in a good wire stitcher. This Vickers job — 'The Empire' — is designed to eliminate delays in production. Its very simplicity is a guarantee that it will continue to work for long hours at high speed. Special features :— self-regulating lock feed with single instantaneous adjustment for wire feed, to suit thickness of work. The feed and cut-off unit and wire parts are instantly removable without the use of any tool. Will operate up to 300 stitches per minute. Thickness Capacity: two sheets up to $\frac{5}{16}''$. For round or narrow flat wires. For saddle or flat work. Width of Stitch $\frac{1}{2}''$.

Vickers-Armstrongs Limited

13 CITY ROAD, LONDON, E.C.1 *Telephone:* MONARCH 1437 *Telegrams:* VICKSBOX, FINSQUARE, LONDON

WHARFEDALE
Birthplace of "Garnett" Papers

The Weir at Wharfeside Paper Mills

P. GARNETT & SON LTD.

Agents for London and Southern Area :
HAROLD SPALDING & CO.,
Wheatsheaf House, 4 Carmelite St.,
LONDON, E.C.4 (Phone Central 0121)

Agents for Northern Areas, Scotland and Ireland :
ASSOCIATED PAPER MILLS SELLING AGENCIES, LTD.,
123 Hope Street, GLASGOW (Phone Central 4744).
64a Jersey Street, MANCHESTER (Phone Collyhurst 1794)

Paper Makers since 1770

WHARFESIDE, OTLEY ('Phone: OTLEY 2202) YORKS.

BRITISH BUILT

VARNISHING
and Gumming
MACHINES
for
ECONOMY, OUTPUT & PERFECT RESULTS

- "BUSH" MACHINES are adapted for treating Paper and Boards with all forms of Coating including CELLULOSE.
- "BUSH" MACHINES will Varnish or Gum Paper and Boards all over the surface or in strips of any desired width.
- "BUSH" MACHINES are made in all standard sizes from Double Crown to 40" × 60" and can be fitted with gas or electric heating apparatus for even and rapid drying.

Note—Our new Patent Electric Dryer, fitted with thermostatic control is a complete success.

- "BUSH" MACHINES are used by all the leading houses engaged on LABELS, CARTONS, SHOW CARDS, PLAYING CARDS, etc., in all parts of the world

Another well known
"BUSH"
SPECIALITY
is the INK MIXING & BLENDING MACHINE
Made in four different sizes: 28 lbs., 75 lbs. 150 lbs. and 200 lbs. capacity. Saves ink and labour.

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EDMUND BUSH & SON LTD
CROWN POINT ROAD, LEEDS, YORKS, ENGLAND

PAPER & BOARD COATERS & ENAMELLERS · EMBOSSERS · PAPER TUBE WINDERS
WATERPROOFERS · IMPREGNATORS · CORRUGATORS · PRINTERS · PAPER STAINERS
AND WALLPAPER MANUFACTURERS · PAPER BAG MAKERS · PAPER
LACE & CREPE PAPERS · PAPER BLINDS · ENVELOPE MAKERS · ACCOUNT BOOK
& MANUFACTURING STATIONERS · TAGS TICKETS AND LABELS · PAPERS
PAPER & BOARD COATERS · EMBOSSERS · PAPER TUBE WINDERS
WATERPROOFERS · IMPREGNATORS · CORRUGATORS · PRINTERS · PAPER STAINERS

CONVERTER NOTES

Exports

AND THE PAPER & BOARD CONVERTER

PRACTICALLY every single item which the factories of Great Britain manufacture in the production drive to "Close the Gap" between exports and imports will entail the use of paper or board in at least one of its many converted forms.

The products of our factories will stand or fall largely according to the degree of attractiveness and appeal of package and design.

The importance of design in both package and printed message was stressed by Sir Stafford Cripps when he told industrialists recently that the saleability of our export goods was every bit as important as their production and urged designers to concentrate on the best possible type of package and so help British goods to hold their own in the world's markets.

Fortunately for Britain, there is no country in the world where paper and board converting is so highly developed nor is there any industry in the country more anxious or willing to play its part in the drive for increased exports.

Representatives of *Paper & Print* have recently been making enquiries of converters all over the country regarding the ways in which they are equipped to help in the production drive and we take pleasure in reproducing the following reports which are fairly representative of the tenor of the paper and board converting industry as a whole.

THE MANUFACTURE OF WRAPPINGS, WATERPROOF PAPERS, Etc.

As one of the principal manufacturers of wrappings, waterproof papers and tube papers of every description Smith, Stone & Knight, Ltd., of Birmingham, are geared-up to meet any demands which may be made from them for the supply of their specialities. Nearly 80 per cent. of the entire production of this company's tube papers is being

Photograph by courtesy of Mersey Docks and Harbour Board.

Two of the 87 docks at Liverpool, where mile-long queues of lorries loaded with export goods gather almost daily.

THE MACHINES THAT GIVE YOU
A NAME FOR GOOD WORK

SOAG Precision Machines uphold your reputation for good work because they are designed and made to uphold ours. Easy to operate, economical to run and simple to maintain, SOAG Precision Machines for printers incorporate all that is best in modern practice. As the watermark identifies a good paper, so the name SOAG identifies a good machine.

THE SOAG PRODUCTION PROGRAMME INCLUDES : PRINTOMATIC HIGH-SPEED STOP-CYLINDER PRESS, MACHINES FOR PAPER DRILLING, GLUING, JOGGING, DECKLE-EDGING AND BOOK CASING-IN, MACHINERY FOR MAKING CONTINUOUS STATIONERY, CRIMPED CUPS, ETC.

SOAG

PRECISION MACHINES FOR PRINTERS

SOAG MACHINERY CO.

JUXON STREET, LAMBETH, LONDON, S.E.11 · PHONE RELiance 3373 (5 lines)

used by the textile trades for the spinning of cotton, worsted and rayon yarns. The large output of waterproof papers and wrappings manufactured by this concern is also in great demand by packers and exporters all over the country, so that Smith, Stone & Kinght, Ltd., are already making a substantial indirect contribution to the production drive.

The company is also ready to resume the direct export of its many different varieties of wrapping papers—which was discontinued on the introduction of Lease-Lend in 1940—as soon as the appropriate Government department grants the necessary licences and permits for raw materials.

☼ ☼ ☼

The Neptune Waterproof Paper Co., Ltd., of Uxbridge, is in a similar position in already devoting as much as 80 per cent. of its output of speciality papers for export goods. Always provided, of course, that the necessary raw materials are forthcoming, the company is also in a good position to increase its output of case liners and waterproof lining papers.

The high-melting point of "Neptune" waterproof papers has made this paper particularly popular with shippers to tropical countries and the specially treated paper, manufactured by the company expressly for the wrapping of machine parts for protection against rust, is likely to be in still greater demand as the production drive gets under weigh.

In addition to manufacturing papers for ensuring the safe passage of British goods to the world's markets (when permitted) the company also exports considerable quantities of its specialty papers to foreign lands, particularly tobacco-growing countries, and is thus contributing both directly and indirectly to the export drive.

Handling cardboard boxed goods at Manchester Docks—a picture emphasising the need for export goods to be strongly and securely boxed.

Photo by courtesy of The Manchester Ship Canal Co. Ltd.

The special case liners as produced and developed by Lloyds' Packing Warehouses Limited are also destined to play a big part in Britain's export drive—just as they did on each of the battlefronts in the Second World War. Fortunately for our export drive, Lloyds' offer adequate facilities not only for the manufacture of the waterproof papers but also for the making up of both the Double Impermeable Case Liner and also the Tropical Single Pressure Seal Liner.

Two associated companies in the Manchester area are engaged almost exclusively on the production of waterproof papers. An instance of how they have set themselves out to help British manufacturers increase their exports is seen in the new establishment which the company has opened at Warrington and which undertakes to collect, pack and ship to overseas markets anything from "a pin to a locomotive."

BRITAIN'S LEAD IN EGG PACKING MATERIALS

The thought and research which British paper and board converters have given to this intricate packaging problem has not only made this country almost independent of foreign supplies of egg packages but is also helping our converters to win dollars for the nation by bringing orders for British egg containers from abroad.

Holland, for instance, has been using "Raylite" Egg Boxes, a speciality of Bethell's (Boxes), Ltd., of Liverpool, for many years now, and only recently, British European Airways Corporation ordered a quantity of these ingeniously designed boxes for transporting special hatching eggs by air to other countries. The success of this experiment will, no doubt, influence other of the world airlines to try this British-made speciality. As the name implies "Raylite" boxes are exceptionally light in weight and scientifically designed to enable eggs to be despatched with absolute safety by sea, road, rail or air to any corner of the earth.

☼ ☼ ☼

The Lurgan Boxmaking Co., Ltd., of Lurgan, have also devoted considerable attention to egg packing and the £30,000 worth of additional plant which the Company is presently installing for the purpose of stepping-up the production of egg packing material and producing other moulded products at their modern factory in Northern

Ireland will be of both direct and indirect help in the great export drive.

In 1934, they acquired the rights for the United Kingdom to manufacture and sell the well-known "Keyes" Egg Trays, the production and sale of which reached very substantial figures until 1940, when the business came under the control of the Ministry of Food and the entire plant has since been concentrating on the production of Moulded Diamond Cushion Flats as used for transporting eggs from Northern Ireland and Eire to England.

The energy with which the company adapted its plant to the production of this speciality is shown by the fact that to-day it is capable of producing sufficient packing for more than 450 million eggs each year. The new plant, which it is hoped will be in production early in 1948 will have a similar production capacity and will leave a large surplus over and above the Ministry's requirements and which can be used to good purpose either for direct exports or for eliminating the need of obtaining egg packages from abroad.

MISCELLANEOUS PAPER PRODUCTS

A tour of the Stonehouse Mills of the Stonehouse Paper and Bag Mills, Ltd., of Gloucestershire, is an encouraging experience for anyone interested in the nation's export drive. While one department is engaged on the production of protective paper wrappings for instrument dials, cutlery, radio and musical instruments, etc., another department is busily producing paper packets for chemical and medicinal salts and custard and jelly crystals, etc. The company also produces large quantities of liner bags for the food packing trades as well as packing materials of every description for all sections of the engineering industry.

One of the foremost exporters of fancy and table stationery in the north, the Cumberland Paper Co., Ltd., of Cleator, near Whitehaven, is already exporting the bulk of its many paper products to countries in all parts of the world.

Marketed under the appropriate trade name of "Seagull" and "Cumbello," this company's specialities include crepe papers, paper serviettes and d'oyleys, paper tablecloths, cover papers, toilet rolls and all kinds of photographic and fancy stationery. "Seagull" specialities are particularly popular in the Middle and Far East.

GREASEPROOF CONTAINERS

The well-designed Rigid Paper Container produced by Aston and Full Limited, Princes Risborough, for dripping, lard, edible and cooking fats admirably illustrates the leading rôle played by Britain in the field of packaging as this efficient type of container is in great demand in all parts of the world.

Attractive in shape and very sturdily constructed, this greaseproof container is particularly popular among the large pre-packers of all countries for the reason that it is supplied in rigid form and, therefore, ready for immediate use without giving operatives the trouble of unfolding or opening out. The slightly tapered shape enables the containers to nest compactly into each other, which is a tremendous advantage for storage purposes as well as in saving shipping space. The non-leaking qualities of this container when made from greaseproof or vegetable parchment enable the contents to be poured into the containers in a liquid state, which when allowed to solidify, form a compact, efficient and hygienic pack.

MODERN TREND IN CONTAINER DESIGN

Modern trends in container design. (Left): A Container-silencer for a vacuum electric motor. This container can be moulded to the exact shape of the motor and is made from material with a high degree of sound non-conductivity. (Right): Container for a Rolls-Royce aero engine component. The part to be packed is of a delicate nature, calling for a container with the requisite protective qualities. Made by Universal Pulp Containers, Ltd., Glasgow.

Aston and Full's Rigid Paper Containers are available in sizes corresponding to sizes weighing (in avoirupois weight) half and one pound, while quarter-kilo and half-kilo sizes are made for countries on the metric system. The containers look especially appealing when attractively printed and the thoroughness with which the manufacturers cater for the export trade is shown by the fact that they are equipped to print designs in practically every language in the world.

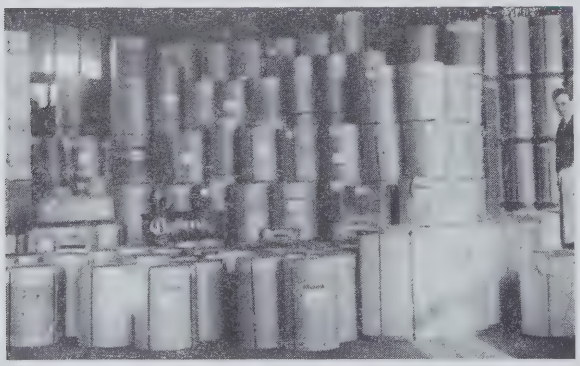
MORE EXPORTS MEAN MORE COMPOSITES

Almost every day brings new uses for the modern type of composite cardboard container which has so definitely proved its worth as well as being economical to produce. There is certainly no more straightforward package yet designed from board for protecting fine precision work or fragile instruments, and this cylindrical type of container is nowadays being used in ever-increasing quantities by the chemical and pharmaceutical industries.

The up-to-date, well-equipped factories of Trepur Limited, at Perivale, are typical of the excellent resources which this country possesses for the production of composite containers. This particular organisation is already making a notable contribution to the export drive by producing large quantities of heavy cores for the textile and plastic industries as well as composite containers for the engineering, electrical and chemical industries. Like most British paper and board converters, Trepur Limited is only too pleased to place its entire experience and specialised knowledge of packaging problems at the service of manufacturers for either direct or indirect contribution to the export drive.

FANCY PAPERS TO SUIT ALL COUNTRIES

Fancy papers have always been a good exporting line from the Chatsworth Mills of Robert Williams and Sons (Gorton), Ltd., and this 97-year-old concern is making every effort to help the export target set up by the Board of Trade. With more than 4,000 different designs to choose from, there is hardly a country in the world not catered for in the extensive range of papers offered by this progressive company. One of the biggest firms in Europe devoted to paper and board converting, Williams of Gorton make a speciality of embossing, finishing and decorating paper and boards of every description and are always ready to discuss with manufacturers and merchants the many ways in which these processes can add lustre and richness to paper and board destined for foreign countries.



The famous "Battersby" hats being packed for export in strong cylindrical cardboard boxes which will be "crated" before being shipped.

MASS PRODUCTION of BOXES, CARTONS, ETC.

The greatly increased production facilities afforded by the opening of their new factory at Congleton, Cheshire, puts R. J. and E. Bradbury (late North Staffordshire Pasteboard Co.) in a most advantageous position in regard to handling additional orders in support of the Export Drive.

Producing almost everything in the paper and board line, from the modest paper bag to giant cardboard packing cases, this well-known firm of converters is particularly well equipped for the production of rigid or collapsible boxes, cartons and containers which it can supply plain or printed in one or more colours as well as either plastic or bitumen impregnated. Having had a wide experience of packaging problems for export goods, the firm is in a position to be of great practical help to manufacturers supplying overseas markets for the first time.

R. J. and E. Bradbury also produce large quantities of container boards for the packing of all kinds of goods, as well as pasteboards and boards for the interiors or exteriors of housing, etc. The printing department has been considerably enlarged since the opening of the new factory at Congleton and the firm is now in a position to offer manufacturers a service second to none in its particular sphere.

PACKAGING SCOTCH

In supplying millions of container-protectors each year to the Scotch Whisky Distillers, the Universal Pulp Containers, Ltd., of Glasgow, are making a most substantial contribution to the export drive.

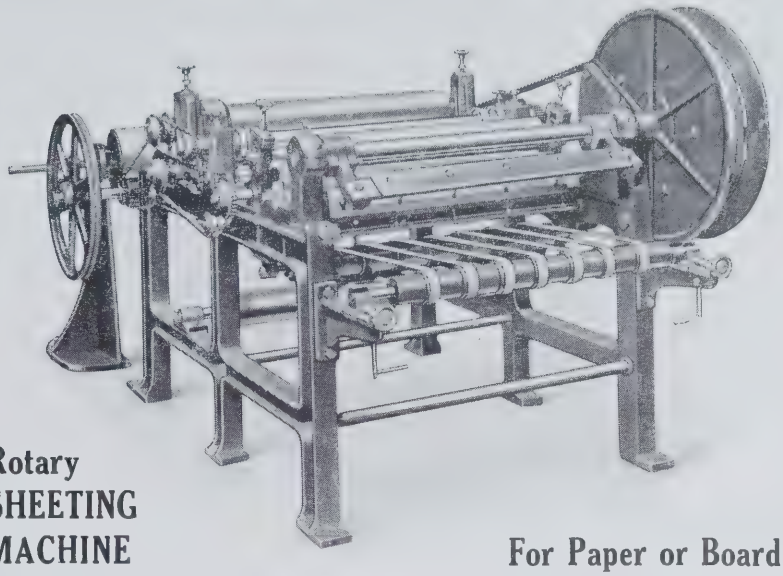
The company has built up a very fine organisation for the production of this ingenious type of pulp container and in addition to meeting the requirement of a large section of native distillers is also producing large quantities of a similar container for carrying aero-engine components, glass lenses and other expensive goods.

2 OUTSTANDING MACHINES

for the

PAPER & BOARD CONVERTER

Write to-day for details. Please state maximum width of your materials.



Rotary SHEETING MACHINE — **For Paper or Board**

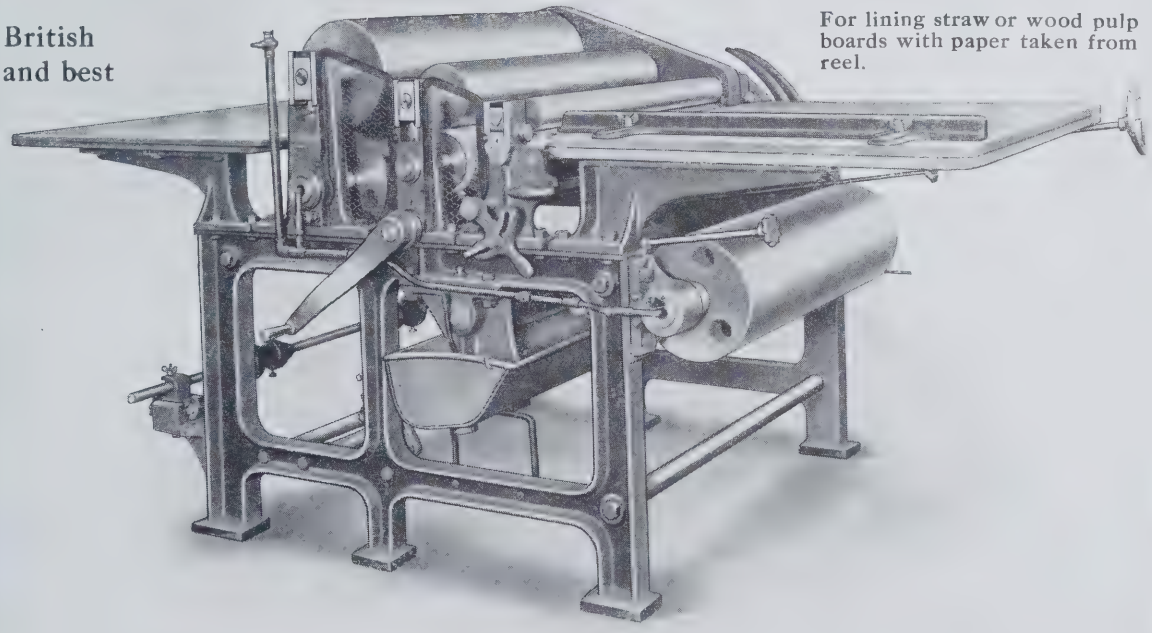
Automatic Sheeting Machine designed to handle materials up to .070 in caliper. Range of lengths to suit any requirement; accurate and efficient. In standard and heavy types, for caliper to .150 in.

The New and Improved

"WELLINGTON" BOARD LINING MACHINE

British and best

For lining straw or wood pulp boards with paper taken from reel.



Output of 10,000 or more lined boards per day, economical in labour, space and adhesive. Users pronounce this machine "without a rival."

T. ROWBOTHAM & Co LTD.

Telephone 2227 Stockport

Victoria Engineering Works

HOWARD STREET, PORTWOOD, STOCKPORT

Telegrams Rowbotham Stockport

EQUIPMENT for the Paper & Board Converter

NEWS FROM ENGINEERS TO THE CONVERTING TRADES

COMPLETE VARNISHING & DRYING OUTFIT

The many repeat orders which Edmund Bush and Son, Ltd., of Leeds, continue to receive for their famous Varnishing and Gumming machine is proof of the popularity which this British-made invention has gained among printers and paper and board converters throughout the world.

It is specially interesting to note that most of the recent orders received for this machine distinctly specify the inclusion of the Patent Drying Apparatus which Edmund Bush and Son, Ltd., have specially designed to work in conjunction with their Varnishing and Gumming Machine and which makes up such an excellent and useful combination.

The " Bush " patent Ink Mixing and Blending Machine is another speciality made by this well-known firm of engineers which has many uses for those paper and board converting plants which include a printing department. Full particulars direct from Edmund Bush and Son, Ltd., Full particulars direct from Edmund Bush and Son, Ltd., Crown Point Road, Leeds, England.

BALERS AND PACKING PRESSES

The small as well as large paper converter will find just the right size of baling press to meet his requirements in the wide range of balers made by Brierley and Kershaw, Ltd., of Shawclough, Rochdale. Sturdily constructed, and available with fixed or movable boxes, " B&K " balers are extremely simple to operate and can be handled by either girls or youths; designed to take up the minimum floor space " B&K " balers require no maintenance beyond occasional oiling and are extremely economical in running costs.

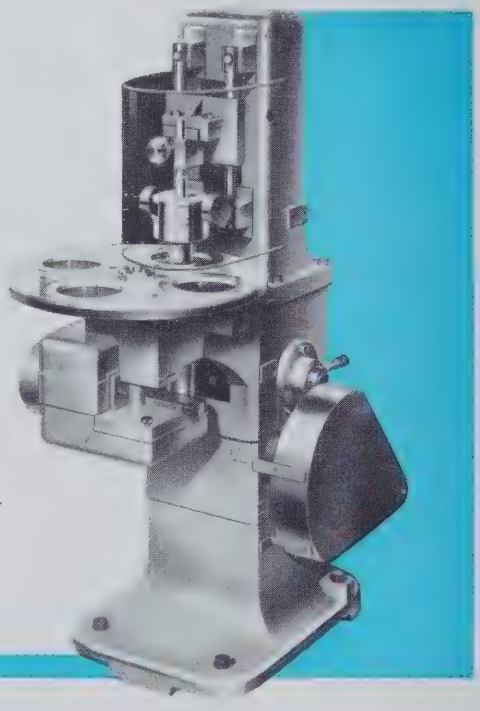
This well-known firm of Lancashire engineers also make a variety of packing presses which have a wide range of uses in paper and board converting and in which the workmanship, design and value is all that one would naturally expect of an organisation of their high standing. Brierley and Kershaw, Ltd., are able to offer early delivery of these machines and converters are recommended to write direct to Brierley and Kershaw, Ltd., Shawclough, Rochdale, Lancashire, for full details.

☼ ☼ ☼

The Soag Crimped Cup Machine is an admirable piece of engineering so simple to operate that it can be worked by a juvenile and in which all moving parts are efficiently shielded to ensure the maximum safety.

Commencing with flat discs of paper this machine transforms these into attractive crimped cups and, in doing so, reaches the amazing speed of 300 to 400 cups per minute.

The simple mechanical process by which this is achieved is lucidly explained and illustrated in a well-printed descriptive folder produced by the manufacturers and which they will be pleased to send to paper converters and others who might be interested. Enquiries for this folder should be addressed to Soag Machinery Co., Juxon Street, Lambeth, London, S.E.11, and mention could be made of having seen the reference to same in this journal.



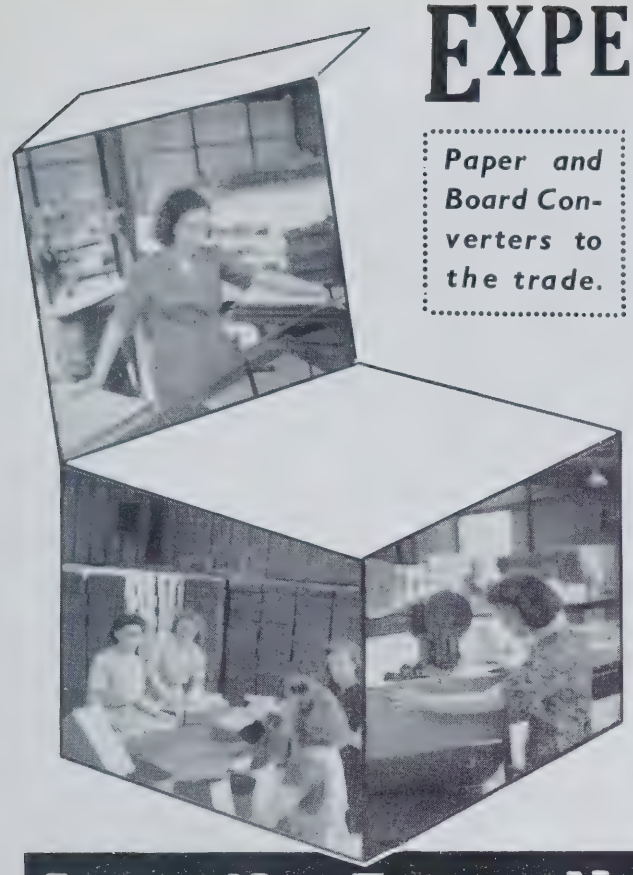
Weight 8½ cwts. Height 4' 6" width 3' 9"

EXPERTS

in Packaging, &c., for

EXPORTS

Paper and Board Converters to the trade.



Specialities include:

BOXES, CARTONS & CONTAINERS
for all purposes, rigid or folding, plain or printed.

PASTEBOARDS
for buildings, packing cases, etc.

CONTAINER BOARDS
of all calipers, for foodstuffs, radios, instruments, &c.

PAPER BAGS—Plain or printed—for the Grocery, Confectionery and Millinery trades.

Large New Factory Now in Full Production

Photograph on left shows a battery of cutting and creasing presses with letterpress printing machines for box and container printing in the background. Photograph below shows battery of stitching machines with conveyor carrying the completed boxes to the despatching department.

Note our new name and new address:

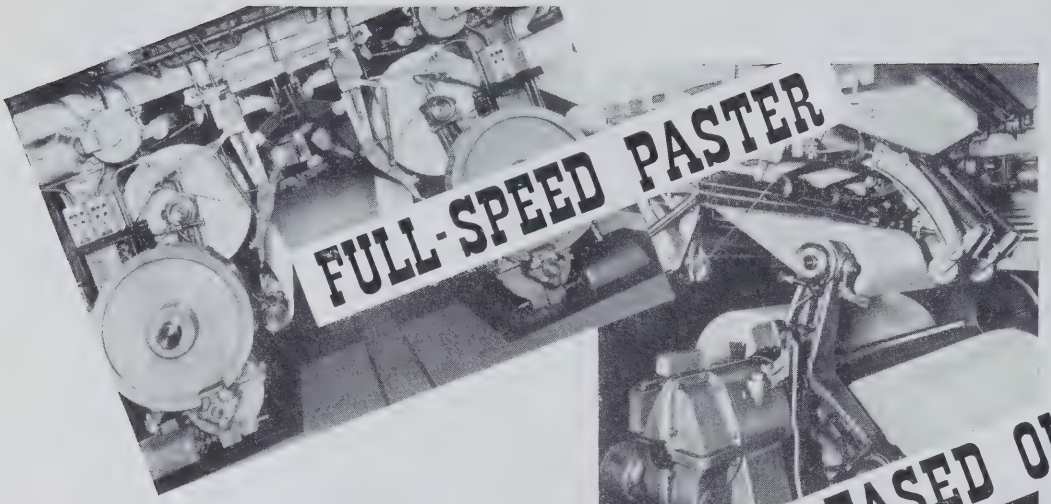
R. J. & E. BRADBURY

(late North Staffordshire Pasteboard Co.)

Sutherland Works, Bromley Road

CONGLETON, Ches.

Phone: Congleton 566 (3 lines).



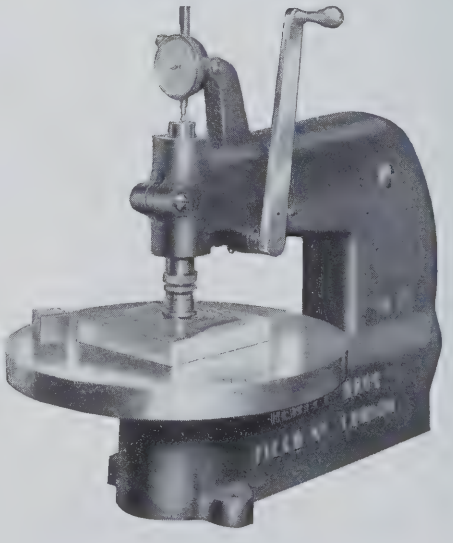
The need for increased output applies as much to newspaper production as to other industries, and the Hoe Reelstand with Full-speed Paster provides a sure means of achieving this end. It can be used on all kinds of Rotary Presses whether for letterpress, gravure or offset processes.
Two types of Full-speed Paster are available—column or pedestal mounted. Automatic replacement of rolls. Proper web tension throughout the run irrespective of size of reel. Tension, once set, works within close limits without adjustment. Reelstands are clear of obstruction, handier to reload and prepare replacement rolls for pasting.

R. HOE & CRABTREE LTD

109 BOROUGH ROAD, LONDON, S.E.1 and WATER LANE, LEEDS

Reduce YOUR Make-ready THIS WAY

PREPARE your blocks for printing BEFORE they are made-up in the forme. The HEWITT Super-Simplex Type-High Gauge will give you accurate height-to-paper readings for the whole surface of the plate at a pressure equivalent to actual printing conditions. A very appreciable percentage of the minder's make-ready time can thus be saved — a big consideration in these days of high production costs.

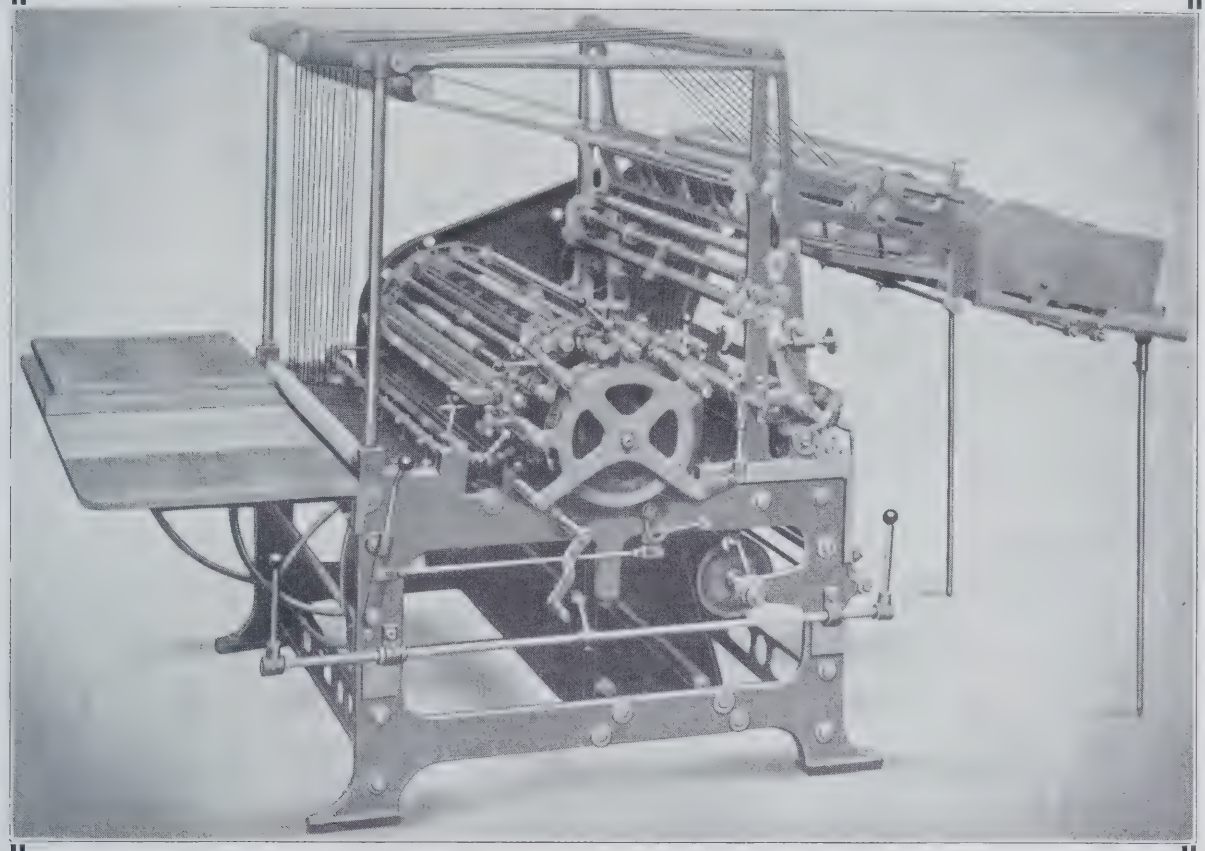


HEWITT BROS

FIELD ST., KING'S CROSS, LONDON, W.C1.

TELEPHONE - - - TERMINUS 6301-2

SHAW'S *Latest* "SUPER-IMPERIAL" *All Ball-Bearing* SINGLE SIDER DISC RULER



Can Be Run As Fast As The Operator Can Feed!

HERE AT LAST is the ideal, all ball-bearing Disc Ruler, suitable for either jobbing work or short runs and at the same time capable of enormous output by reason of the fact that it can be run perpetually as fast as the operator can feed! Built on entirely new lines this machine not only ensures greater accuracy and increased production but it is also specially low-built to facilitate setting and allow the operator full view of the work in progress.

Full particulars gladly sent on request:

JOHN SHAW & SONS (HONLEY) LIMITED

HONLEY, HUDDERSFIELD, *England*

Telephone: HONLEY 22 Telegrams: RULING, HONLEY

Codes: A.B.C. 5th Edition and Bentley's Complete

SPECIAL FEATURES

- Built 3ins. lower to enable operator to have better view of Ruling and more accessibility when setting.
- All adjustments on the right hand side of machine.
- The larger cylinders enable two 21 in. sheets to be ruled at the same time.
- Universal throw-out for operator's use at the end of each ream.
- Useful "Ever-Ready" Centre Support.
- Layboy approximately four feet from the ground, complete with back and side joggers ensures perfect stacks.
- NEW DESIGN PERFORATOR for striking and run-through work built completely away from the ruling blanket, therefore ensuring no bits get in contact with the discs, etc. Designed with steady bar and steadier thus enabling it to do heavy work, slitting, creasing, bending, &c. with perfect accuracy.

Sole London Agents: **HAMPSON, BETTRIDGE & CO., LTD., BELMONT WORKS, 63-67, BELMONT STREET, N.W.1**

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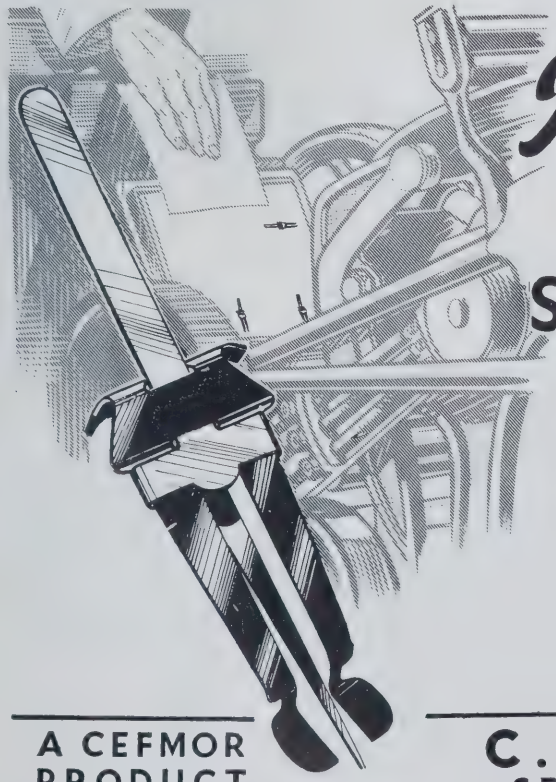

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THE 'CEFMOR'
Spring Tongue Gauge Pin

The "Cefmor" Spring Tongue Gauge Pin is made of the finest Sheffield Steel, hardened and tempered by the most modern methods. It has a double prong and a long brass tongue which is adjustable, and is designed for simplicity and long life.

STOCKS AVAILABLE.

Packed in boxes containing one dozen Gauge Pins at 4/8 per box, postage extra.

A CEFMOR PRODUCT

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BRITISH CROWN BOND
HERITAGE TUB SIZED AIR DRIED
CHEDDAR VALLEY LEDGER
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TRADE ENQUIRIES INVITED

True to Type

The modern sailor sustains the glorious traditions of his forbears. Similarly Pass Printing Metals remain true to type and loyal to their high reputation.

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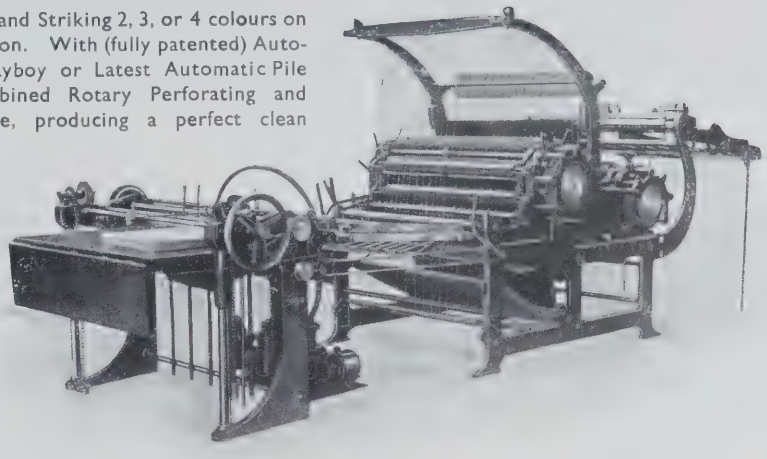

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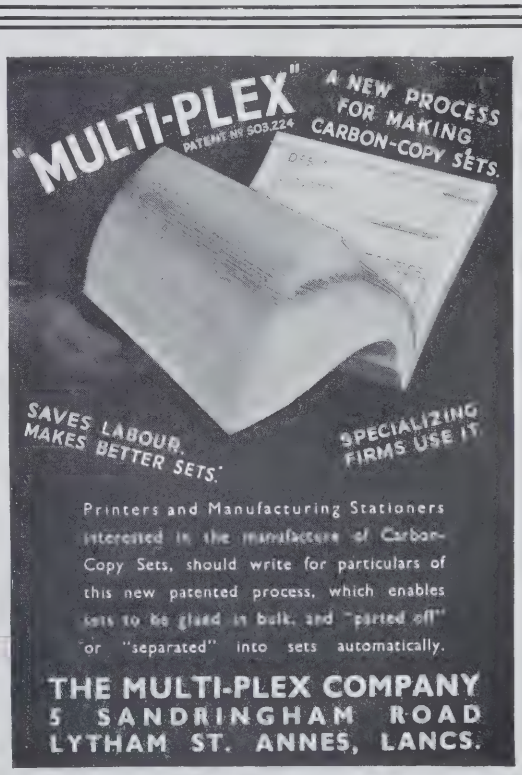
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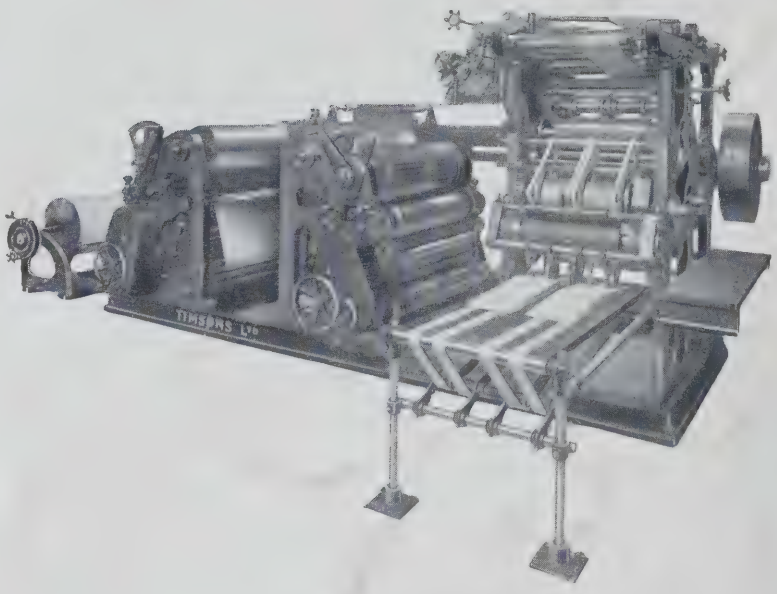

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